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MEMOIR

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THE ROADS OF CEFALONIA.

BY

LT. COL. C. J. NAPIER, C. B.

INSPECTING FIELD OFFICER IN THE IONIAN ISLANDS, AND
[illegible] RESIDENT IN CEFALONIA

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DEDICATED TO

Statistical Tables,

STATE OF THE THERMOMETER,

&c. &c. &c.

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TO HIS EXCELLENCY

LT. GEN. SIR FREDERICK ADAM, G.C.B.

LORD HIGH COMMISSIONER OF THE IONIAN ISLANDS.

When I received your Excellency's command to construct roads in the island of Cefalonia, I proceeded in that operation upon a general principle, guided by the formation of the ground, and the degree of traffic existing, or likely to be produced, by an increased facility of communication. As you personally examined and approved of my proceedings, I considered them fully sanctioned, and as the people of the island have, with a laudable zeal, contributed their labour and money towards the work, it appears to me right to publish an account of the mode in which your orders were executed, that, should any circumstance remove me unexpectedly from the government of Cefalonia, my successors may pursue the same course, and not harass the people by changing the *general direction* of any road, thereby rendering past labour useless, and future labour vexatious.

Whatever errors I have committed in the details, other residents may correct, but it is not probable that they will change the *direction* of the roads

when they see the plan I have acted upon, and have the advantage of the local experience, which Lieutenant Kennedy and myself acquired by many oppressive journies on horseback over the mountains. In mentioning Lieutenant Kennedy, your Excellency will allow me to take this opportunity of publicly stating, how much assistance I have received from this officer. The market place of Lixuri, and other public works, will prove his talents as an engineer, but it requires to be his companion in labour, justly to estimate the value of his services to the public.

When I had written the Memoir on the Roads, it occurred to me, that a few observations on the defence of the harbour, and on the health of the troops, might also be useful, and in that hope, I now publish this small tract upon those subjects.

I feel great diffidence in dedicating the Memoir to your Excellency without your permission; but the fact is, that having only now decided upon publishing it, there remains no time to write to you: and to no person could I so properly address this pamphlet, as to one who diligently seeks to obtain every kind of local knowledge relative to his important command, and who so actively employs his time in public improvements.

I have the honour to be,

Your Excellency's

Obedient and very faithful servant,

C. J. NAPIER.

London, July 1825.

ITHACA
GUISCARDO
CAPE ANASTASIO
ST. EUFEMIA
Pillaro
Chirianche
Port Athenæ
SKETCH
OF THE
ISLAND OF CEPALONIA
NEW LINE OF ROADS
PROPOSED MARTELLO TOWERS
FORT PROPOSED OF TELEGRAPH HILL
Scale
10 English Mill
ZANTE
Published By I. Redgway 169 Piccadilly

MEMOIR

ON

THE ROADS OF CEFALONIA.

1824.

SECTION I.

Formation of the Island.

CEFALONIA is said, by the inhabitants, to be about one hundred and thirty miles in circumference; but I have no means of ascertaining this, as there is no accurate survey of the Island, the accompanying sketch (taken from a most imperfect one, which I found in the Resident's office) will serve to show, that Cefalonia is divided into several great valleys, formed by the under ridges of the Black Mountain, the height of which, above the level of the sea, is five thousand three hundred and eighty English feet, by barometrical measurement. Although these ridges have mule tracks across them they are difficult to traverse, and in many places not only extremely dangerous, but for loaded animals quite impassable.

The consequence of this is, that many of the

great proprietors seldom visit their estates, although only a few hours' distance from Argostoli. Men will not risk their safety by travelling on a bad mountain road, where, should their mule make a false step, they would be thrown down a precipice of many hundred feet, into the sea. Their country houses are therefore allowed to decay, are generally destitute of furniture, and if the owner has energy enough to take the journey, instead of the comforts and pleasures of an English country residence, he finds himself in the midst of filthy ruins, and without a single comfort, except such as he may have brought with him for the few days he remains; and all this in an island producing every thing calculated to make the country delightful. On the Black Mountain a gentleman might build a villa, and pass the heats of summer in the midst of woods, and the most beautiful scenery, and from his windows would have one of the most extensive and interesting views in the world; would see the whole of Cefalonia, Ithaca, and St. Maura, with the small islands, spread like a map beneath him; and beyond them, all Acarnania, Mount Pindus, the gulph of Corinth, Patras, Clarence, and the Arcadian mountains. His ice-house might be filled as late as the end of May, his table furnished with the finest fruits and vegetables; and the height of the situation would give him an atmosphere many degrees cooler than in Argostoli, to which place he might drive in two hours, and re-

turn in three. Not only the Black Mountain, but many parts of Cefalonia afford similar advantages; yet with all these comforts and pleasures within their reach, the gentlemen of Cefalonia are huddled together in Argostoli, where they describe any thing uncomfortable by saying, "*it is like being in the country.*" The effect of this is, that the proprietor orders his tenant to come to Argostoli with his rents, and rarely goes to see his country possessions; his money is spent in town, and the peasants remain uncivilized and poor; so slight indeed is the intercourse between the latter, that a countryman of the valley of Samos, considers his neighbour of the valley of Pillero as much a stranger as if he belonged to some distant country.

Such being the state of the island, it became a matter of importance to make roads, that men might know each other, that the rich might visit and improve their estates, by bringing the produce to market at much less expense, and that the valleys of Cefalonia, instead of being unknown to many of their own inhabitants, might pour their produce into the capital, giving to this large island its proper vigour and station in the Ionian states.

SECTION II.

Direction of the Magistral Roads.

Of those points which appear to be important, the direction of the great roads is the first. The five chief ports are, *Argostoli, Lixuri, St. Euphemia, Guiscardo,* and *Asso ;* and the first object is, to connect these ports by magistral roads.

A road from Argostoli to Guiscardo, with a branch to the *right,* through the valley of Pillaro to St. Euphemia ; one to the *left,* through the district of Tinea, to Lixuri ; and another, through Lower Erisso to Asso, will open the intercourse between those ports, and also between Upper and Lower Erisso, and the valley of Pillero. All these districts, hitherto shut up among the mountains, are wholly dependent on their respective ports for supplies, which are uncertain.

A road to Scala, through Heraclea, over the pass of St. Liberales, is very necessary, as, by the present path, corn is sent with difficulty from most parts of the island, to be ground by water-mills in that district; and also, because the want of a road into Heraclea has completely ruined that fine portion of the island.

The third road required is one from Argostoli to Samos, opening that rich valley, and facilitating the communication with Ithaca.

A fourth road, of great utility, would be a coast road round the island; a reason for making which (besides its usefulness in point of defence, and against smuggling) is, that it would draw cultivation along the coast, and thereby prevent the soil of the island being carried into the sea by heavy rains (a great cause of sterility in small mountainous islands without much wood): for the division of the sides of the mountains, by walls, into vineyards and fields, would prevent the water from accumulating into torrents, and it would thus be quickly absorbed by the soil, depositing the earth which it brought from the higher parts of the mountain.

I would also make another road to St. Euphemia, branching from the Guiscardo road, near Faraclata; but as one good road would be open from Argostoli to that part, this second road is a matter of inferior importance.

A road from Sotiro to Chiriacchi, across the Isthmus, would be very advantageous, as the small valley, running down to the bay of Asso, has a constant stream of excellent water, and therefore would produce Indian corn, and afford pasture for cattle; this road would also give the means of a shorter communication with Asso.

From the Lixuri road, a branch should strike off to Port Athera. These great roads, being once opened, will in a short time produce the general use of wheel carriages; and the bye-roads, between

villages will necessarily follow, without any exertion on the part of the government.

SECTION III.

Description of each Road.

No. 1. Road to *Guiscardo.* — This road, beginning at Argostoli, and ending at Guiscardo, is at present about nine hours journey for a mule, or a man on foot, and cannot be performed throughout by a mule, if loaded; it passes over two ridges of the Black Mountain, the first, at the point where the road passes, is about *two thousand two hundred and eighty seven* feet above the level of the sea; the slope is sharp on the south-side, but more gradual on that towards the north. The second ridge is very steep on the south-side, and where the road passes is *two thousand one hundred and sixty* feet above the level of the sea, rising abruptly *one thousand five hundred and thirteen* feet above the valley, at that part where the road begins to ascend the pass called *Kackilangada.* On reaching the top of this last ridge, the road does not at once descend, but continues along the side of a ridge, running nearly north, till both the ridge and the road reach Guiscardo. The whole length of this road admits of the cultivation of vines, but through *Upper Erisso* no loaded mule can pass; and the women carry the whole produce of this dis-

trict on their heads, nor is there a foot of ground left uncultivated by the admirable, but necessary, industry of the inhabitants, whose scanty income depends entirely on the sale of their wine.

No. 2. The road to *St. Eufemia.*—This road leaves the Guiscardo road, near *Dracato,* about four hours distance from *Argostoli,* and, descending the valley of Pillaro, arrives at *St. Eufemia* in an hour and an half: this road, having no hills to pass, will be easily made.

No. 3. Road to *Lixuri.*—This road should leave that of Guiscardo in the district of Pillaro, and cross the mountainous district of Tinea, descending into the Marsh of Livadi, which it would skirt, and continue along the plains to Lixuri. This road, besides opening Tinea, would assist the cultivation of the Marsh of Livadi, which is valuable, and well worth the attention of government.

No. 4. Road to *Asso.*—This road ought to leave that of Guiscardo at a short distance up the pass of *Kakilangada.* The present mule path runs too near the base of the mountain: it is about two hours from Dracato to Asso, and is so dangerous, that few of the islanders ride along it, and in some parts of it loaded animals cannot pass each other: it runs along a precipice nearly its whole length. This road will be very difficult in its construction, but very important to the district of Lower Erisso, where there is much cultivation.

No. 5. Road to *Scala,* through Heraclea.—This

road passed originally by the Marsh of *Kranea*, but as three high hills were to be crossed before the pass of Liberales was reached, I preferred taking a new direction through *Drepano*, over the rocks at the bridge-head, through the valley, and crossing the heights above Frangata: by this direction, the road is much shorter, and much easier, and opens a rich valley close to Argostoli; besides the rocks of Drepano, there is but one hill to be crossed, instead of three; and the communication will be opened with *two villages*, whereas the old road has not this advantage. After passing through the large and beautiful village of Frangata, the road runs along the plain of St. Gerasimo to the village of Valsamata, at the foot of the pass of *Saint Liberales*, which it crosses, passing by the chapel, at *two thousand eight hundred and sixty* English feet above the level of the sea; the ascent is very abrupt and difficult, being covered with masses of rock, it rises *one thousand six hundred and forty-six feet* from the plain of St. Gerasimo, at an angle of about forty-five degrees; the plain at the foot of the pass being, itself, *one thousand two hundred and fourteen feet* above the level of the sea; on the eastern side it descends with a more gentle slope, and the road then traverses the sterile district of *Pirgi*, and entering that of *Heraclea*, passes on to *Cape Anastasio*, the most southern point of the island: the old road to St. Gerasimo passes so abruptly up the hill, that it can

never be used as a carriage road, or kept in any repair without vast expense, whereas the new road will be shorter, will cross the hill of Frangata at a gentle slope, and the remaining part of it towards Argostoli, being through a valley, will be easily made. A mule track now exists, so that there will not be much ground to purchase, and the great difficulty (that of mounting the pass of *Liberales*) is now overcome. This road from *Argostoli* to *Scala* is at present about *nine hours*.

No. 6. *Road from Argostoli to Scala by Passades and Leo.*—Part of this road was excellent, but no pains having been taken to keep it in repair, it has suffered much; it should be continued to meet the *Heraclea* road at *Cape Anastasio:* and thus all the villages that girdle the base of the Black Mountain would be connected by a good carriage road.

No. 7. Road from Argostoli to the Castle.—The *Bergo* and *Castle of St. George* being so near the capital, and a military post, it appeared proper to make a good carriage road up into the fort and town, which are about an hour's distance from Argostoli; in repairing that part of the road which skirts the *Marsh of Kranea,* I propose to cut a wide and deep ditch on the side next to the hill, in order to cut off the *fresh water* from the Marsh, as much as possible, it being the origin of the latter, which is entirely formed of alluvial deposit, and will, in the course of a few years, become much more unhealthy than it now is; but,

by the ditch proposed being carried quite round the head of the Marsh, and a road also made between it and the sea, no doubt exists in my mind that the Marsh would also disappear, for the source of the evil being cut off, the exertion of individual interest, or of the government, would be effectual. That the streams from the rich ground of *Livato* form the Marsh, no one can doubt, who will examine it, and observe the shallow water, and the quantity of mud and filth which are formed at those places where the winter streams fall into the port; and at such places disease is generated. None of these stinking weeds, and muddy spots, are found, *except where fresh water falls into the salt.* I would make a large reservoir, covering about an acre, the sides of it to rise as high as the level of the water would admit; into this basin I would turn all the fresh water; at times it would overflow, and fall into the sea through a conduit; when this was not the case, it would quickly dry up; and with the soil deposited, I would gradually fill up small pieces of the Marsh, enclosed on purpose by loose stone walls, the materials for which abound on the spot; and these enclosures should not exceed half an acre each: the quantity of earth deposited, after each shower, in the basin, would far exceed what a superficial observer may imagine, and vast quantities would be got out of the ditch. Those portions of marsh might be given to private persons, on the condition of their

filling them up within a certain space of time, during which, each in turn should have the advantage of the soil collected in the basin. In this manner, and with the aid of a "cavo fungo," such as are used at Venice, I have no doubt that in three years the marsh would be turned into good cultivated ground. To return from this digression.

No. 8. *Road from Caligato to Argostoli.*—This road forms part of the proposed great road round the island; and also opens a fine tract of country, stretching southward from behind the town of Argostoli, which tract has hitherto been cut off by the rocky height, on which the telegraph stands. The western side of this ridge is very pretty, and very healthy. This road is about an hour and a half long, is now nearly finished, and the district through which it passes is protected from the mal aria of the Marsh of Kranea by the hills, that also shelter it from the Sirocco, and render it every way desirable.

No. 9. *Road from Argostoli to Samos.*—To open this road, which should branch from the Liberales road, near Frangata, will be a work of much utility; for the valley of Samos is fertile, and the present mule track very bad, and mountainous. The new road to Samos, besides adding much to the facility of communicating with Ithaca, will assist in supplying the market of Argostoli with fish, which is found in greater abundance, and much finer, in the bay of Samos, than in the port

of Argostoli; from whence to Samos is now four hours' distance.

No. 10. *Road from Sotiro to Chiriachi.*—From Sotiro the road rises a steep hill, and then gradually falls in a long slope to Chiriachi, passing through a fertile country, watered, at all seasons, by an excellent stream. By going in a boat from Argostoli to Sotiro, from thence on a mule to St. Chiriachi, and from Chiriachi by water to Asso, you may now reach the latter place in two hours less time than by the land road; but the bay of Asso is only passable in fine weather. The road from Sotiro to Chiriachi is an hour and a half; and, except just above Sotiro, not presenting many difficulties in its construction.

No. 11. *Road from Lixuri to Port Athera.*—At Port Athera vessels seek shelter, if they encounter an adverse wind between St. Maura and Argostoli; the road from thence to Lixuri is about three hours; and, should Port Athera again be opened, this road will be very important: at present it would open that part of the country, which is very susceptible of cultivation, and be of use in aiding communication with *Corfu*; also for the conveyance of wood to Lixuri, from the vicinity of the village of Athera, where it is cut. Except close to the port, the risings of the ground are very gentle, and the road easily made; the country through which it passes is open, and uninteresting, except near Lixuri, which is very rich, and where it passes

the site of the ancient town of *Pale*, and the plain where Philip encamped.

No. 12. The bye-roads would require too long a description for this memoir: the chief one is from *Asso to Guiscardo*, which may almost be called a primary road, but will be too difficult and expensive in its construction to be thought of, until the others are completed. Another useful bye-road would be, *from the Castle of St. George to Liberales*; and again, another from Samos, up the valley into Heraclea: all these districts send corn to be ground by the water mills of Heraclea; but, as I have before said, when once the high ridges of the black mountain are cut by magistral roads, the smaller ramifications will be gradually worked out by individual interest. To make those will require all the vigour and activity of the local government: it is a gigantic work to make a hundred miles of road through such an island as Cefalonia; which, although of so small an extent, contains a mountain whose summit is higher than the highest in Great Britain; and where, in three places, the road passes at a height nearly equal to the summit of Mount Vesuvius, and the ascents very abrupt and rocky; but patience, industry, and a good method, will accomplish it, without hardship on either the rich or the poor. One thing ought always to be remembered, that the government of Cefalonia must not relax in its

exertions, or the road making will be spun out for years; and instead of a benefit, become a nuisance to the island. Portions of road will do no good; carriages cannot be introduced until roads are completed, nor until then can much benefit or satisfaction be derived by the people. When a road has once passed through a district, the work in that district wll cease; the northern, southern, and part of the eastern villages do not now work; and, as the roads push farther from the capital, those villages will come into play, and those now at work will have rest; but, to let the work relax, is to make it perpetual and harassing.

SECTION IV.

Roads begun.

Of the roads which are proposed, four have been begun.

First, the road to Guiscardo, on which I have placed two working parties; one where it passes the first range of heights, the other where it crosses the second ridge, at the pass called Kakilangada. The carrying the road up this pass is a labour little inferior to that of Liberales: my object is, first, to carry the road over all the passes of the

mountains, being by far the most difficult part of the operation: when this is finished, the junction of these pieces of road will be easily effected; and even should the road making be stopped by any unforeseen event, still those passes, which hitherto were the great impediments to communication, will be such no longer.

Secondly, on the road to Heraclea I have also placed two parties; one at the bridge-head, near Argostoli, and the second at the pass of Liberales: this last, the most difficult of all our operations, has been nearly accomplished; what is left undone being, comparatively, light work.

Thirdly, on the Castle road I have placed one party; this has been laborious work, but is nearly completed: here also I began at the most difficult part, that is to say, the Castle hill; the rest is a level.

Fourthly, on the road through Livato, I began also at the most difficult part; this is almost finished.

Fifthly, The Lixuri road is begun at Lixuri, where I have likewise begun and nearly completed a bye-road, of great use to the villages around; this has necessarily impeded the progress of the main road.

SECTION V.

Detail of the Construction.

This consists of five parts.

First, the longitudinal slope of the roads.

Secondly, the transverse slopes.

Thirdly, the materials.

Fourthly, the disposition of those materials; and,

Fifthly, of the draining.

First, of the longitudinal slopes. The slope of one foot in twelve is the greatest that ought to be admitted in crossing the highest mountains; and at this angle with the horizon, the new road, over the pass of Liberales, has been constructed. This is the most important point in road making; for if the slope is too abrupt, every shilling expended on the road is lost. Nothing can keep roads in repair where the surface water courses down them; in short, an error in this point is the only one in road making which cannot be remedied, except by making a new line of road altogether: it is better not to make a road, than to make one with a greater slope than that above mentioned; to do so, is to throw away money and labour.

Secondly, the transverse slopes and breadth; these, in my opinion, should vary with the soil, and the locality, and also with the age of the road. In flat ground, and soft soil, I would give a new road a rise of one-twentieth part of its breadth,

particularly as in Cefalonia there are no carriages, and an increased degree of curvature is, therefore, unimportant at present. To those parts of the roads which traverse mountains, I would give no rise in the middle, but make them a foot higher on the exterior side, than on the side next the hill; along which I would generally lay curb stones; the water being in this manner thrown against the side of the hill, by its force, clears away the detritus brought down by the rains, while, at the same time, its tendency is to cut into the hill; the road is thus cleaned and widened by natural means. I have tried this experiment of sloping the road inward, and found it completely successful; if, on the contrary, the road is sloped half one way, and half the other, only half of the surface-water would be thrown against the hill, and the other half be mischievously employed in washing away the new-made edge of the road towards the valley, which would not resist its attacks; for mountain roads are always injured by the water running across them, and wearing the *outer edge* away; this cannot happen if made as I propose, the whole force of the water being directed where it can do no harm.

Thirdly, Of the materials. The materials, which abound in Cefalonia for making roads, are hard and soft lime-stone, and red earth, which, when mixed, form a cement. The tuffo or soft lime-stone is of a brown sand colour, very porous, and,

when first exposed to the air, is cut with hatchets, like Malta stone, and is soon pounded, and trod into a solid mass, when laid on the roads. Whenever a bed of tuffo is cut through, a substratum of sand is found, nor are those beds very thick, so that there is something adhesive in the sand, which, when pressed, and exposed to the weather, becomes indurated into tuffo. I suspect it is formed of the fine lime-stone sand, washed from the mountains, and mixed with the red earth and sea sand, for I am not aware of tuffo existing except in districts near the coast; but if it does, the reasoning may still be correct. The red earth of Cefalonia is of a brilliant colour, and of so adhesive a nature, that it is used in place of mortar in building. In the best houses, one-third part of lime is added; and it is so fine, that, if mixed up with linseed oil, it serves for painting houses, to which it gives a most ugly appearance. The hard lime-stone of Cefalonia breaks into excellent mettling.

Fourthly, Of the disposition of these materials. When rocks abound, they should be broken, and form the bed of the road; over this, a stratum of stones, broken still smaller, should be spread, and over this another of red clay, which fills up, and serves as mortar; over this we put the mettling, to prevent the mules making a channel for the water. Captain Macphail, an officer employed in the road making, and from whom, in common with several others, I received great assistance, has

tried an experiment, which perfectly succeeds. On the road under his charge he has made a path in the middle, two feet wide, and with double the thickness of mettling; over this he spread sand and red earth; this path both mules and men follow, but which, having been so much raised, cannot be beat into a channel. When this path has been once established, the animals will not quit it; and I then propose to put sand, mixed with red earth, over every part, which will enable people to walk with ease, while the mules will always adhere to the raised path; until this being gradually worn away, the roads will become so hard as to render it no longer possible to make these tracks, and carriages will be, by that time, introduced, which will put an end to the mule paths.

With regard to trees and hedges, this climate is so dry, that they do no injury to a road, and ought to be planted everywhere: but, in Cefalonia, it is quite impossible to preserve trees, as the goats destroy them all, and are rapidly annihilating the public forests on the black mountains; which forests would be a source of great wealth to the island, if protected; but thousands of goats prevent the growth of every thing like a plantation, and, what is worse, are the cause of more litigation, ill blood, crime, and idleness, than any other source of mischief in the island: neither vineyards, fields, nor gardens, can escape the devastations of these animals, as it is impossible to make any sufficient

fence to exclude them. The reasons the peasant likes goats are, *first*, they cost him nothing to feed, as in the day time he drives them to the mountains, and at night into his neighbour's cultivated grounds, who cannot catch them; nor is it easy to prove whose goat does the damage; for in a country where the peasants all live in villages, and the landlords in the capital, no look-out is kept at night: even were they to live among their fields, it would be still very hard to prove whose goat did the mischief, for the goat herd is not so silly as to be seen; he trusts to his goats for getting both into, and out of the scrape, which they do with equal ease.

Secondly, the peasant likes goats, because the milk, cheese, and flesh, maintain him, with scarcely any labour; he therefore spends his time in festivals and gambling. From the want of population the price of labour is high; and he can always earn, in three days, as much as will keep him for a week, with the aid of his goats.

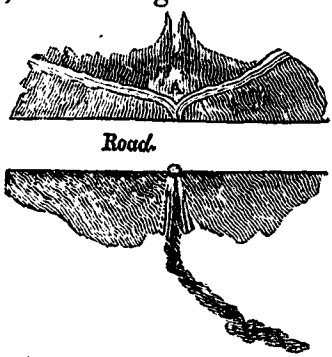
Thirdly, the peasant prefers the goat to sheep, not only because it is more active in trespassing, but also because it is more hardy; it lives upon less and coarser food, and gets it among the rocks, where sheep cannot climb. Goats mount up trees to the top, and eat the leaves; in short, a goat is the most accomplished thief in existence; and although it is digressing from the subject, I will say, that no measure of government would do so

much good to this island, or be more welcome, than a tax upon goats, which would gradually clear it of this curse; and instead of them, introduce sheep, which are less mischievous to trees, and more easily fenced out.

It is not to be supposed that the whole of the peasants keep goats, and that the gentlemen alone possess the land, and suffer; this is by no means the case: it is, generally speaking, the idle part of the community that keep goats, while the small portion of land that they possess is left unattended to; and their more industrious neighbour, who turns his ground to account, suffers from the trespass. Almost all the peasants of Cefalonia possess some land themselves, or have the "right of labour" on the property of some more wealthy neighbour; that is to say, the peasant has the right to cultivate the ground, and the produce is divided, in certain proportions, between him and the proprietor of the land: now all those men who cultivate the soil, whether rich or poor, suffer from the goats; indeed the trespass is more injurious to the poor man than to the rich; the destruction of a vineyard being ruin to the first, and only a partial loss to the last.

Of all the enemies to good roads, *water* is the greatest, and pains must be constantly taken to avoid its attacks. Of the surface-water I have already spoken; it remains only to consider that which flows from the hills; to get rid of this, I

propose to cut diagonal ditches, which would meet at certain low points in the side of the hill (where the road crosses ravines), at the angle A. Where the drains reach the inner side of the road, arched conduits must be turned; thus the water flowing down the sides of the mountains is cut off, and carried obliquely to those points of the road which are prepared to let it pass. By these conduits being made narrow and high, the water will rush through with such force as to keep them clear. Roads should be made as high up the hill as circumstances admit of, as the water is more under command, and many ravines avoided.



In speaking of the composition of the roads, I have so far deviated from M'Adam's system, as to recommend the putting sand or sharp gravel over the mettling; because an exact adherence to a system where local circumstances differ, would be unwise, and not doing what M'Adam does, that is to say, applying good sense to the work. Neither mules' hoofs, nor men's feet, will pulverize the mettling of M'Adam; nor will men or animals hurt their feet, if they can get off such a road; but when carriages are introduced, all repairs may be made of simple mettling: in short, to cover the

surface of the road with sharp mettling, in a country where nothing but unshod mules or men on foot travel, would be making *impassable* roads; I have therefore no hesitation in saying, that by making a well mettled road, with a smooth raised path, of two feet wide in the centre, every object is answered; horses, mules, and men, want no more; and, when carriages are introduced, the broad mettled road is all ready for them. This path must not be made on such parts of the road as wind up mountains, as it would prevent the water being thrown against the hill; neither do such paths require it, for the surface of the mountains is composed of limestones, split in small pieces, and this forms a natural mettling, very small, which at once beds into so smooth a surface, as to cause no inconvenience to the feet. The zigzag made by the roads, in going up a mountain, must, at the angles, be made nearly horizontal, or even rising in the contrary direction to that of the longitudinal slope above, with a deep ditch cut between these landing places and the hill, otherwise the water is apt to rush over the first part of the zigzag below, and carry it away: these turns require great care and labour.

SECTION VI.

Average number of Miles, and probable Cost in Time and Money.

THERE remains little to be said but what relates to the cost. The average number of miles required I judge to be about one hundred: *viz.*

Hours.	
12	to Guiscardo, from Argostoli.
1	to St. Eufemia, from Drecato.
2½	to Asso, from Drecato.
4	to Samos, from Argostoli.
3½	to Lixuri, from near Farsa.
2	to Sotiro, from Chiriachi.
9	to Scala, by Liberales, from Argostoli.
1½	to Castle, from Argostoli.
2½	to Port Athera, from Lixuri road.
2	to Calegato, from Argostoli.
Total 40	hours.

I do not think that a mule's pace exceeds two miles and a half per hour, taking one road with another, which gives about a hundred miles, and this, I think, will completely open the country. In this calculation I do *not* include the *coast-road*, as that is one not absolutely necessary, and it would be done from time to time, as carriages

were introduced, and population and agriculture increased.

With respect to the cost in *time* and *money*, required for the construction of the roads in Cefalonia, I calculate, that every fifty men ought, yearly, to complete two English miles of road, fifteen feet in breadth; taking the average of the ground. The cost in money may be averaged at three hundred dollars per mile, as nearly as I can form an opinion, but it is difficult to say; it is true that, hitherto, much more has been spent, but then we have, as yet, been employed on the most difficult, and consequently the most expensive part of the whole, from the necessary slowness of the progress, and destruction of the tools.

On the 31st December, 1822, we had paid nine hundred and sixty-six dollars for tools; we had advanced one hundred and thirty dollars for a public mole, we had finished about four miles of the most difficult and expensive part through the passes of the mountains, and we had a balance of above six thousand dollars in hand, on account of the roads of Cefalonia, and applicable to that department of expenditure solely; although the people of the island had an idea, that the general government intended to absorb this money in the general state treasury, and thus to create a partial tax upon Cefalonia. The general government never had such an unjust intention; but it very probably, and very *properly*, will place the road funds on

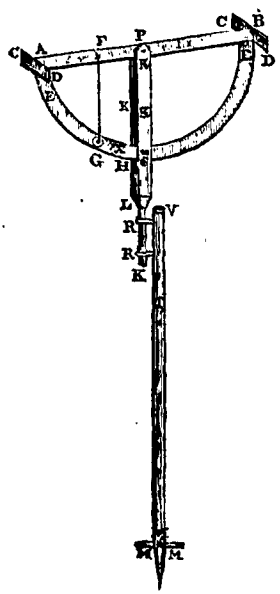
the same footing with all other public accounts *. Having been a considerable time away from the island, I have left the above calculations as they were made a few months after the roads were begun; as I believe they are sufficiently correct in the general outline; that is to say, the expense of the roads is fully met, by the amount of subscriptions from the non-labourers; for, although the government of the Ionian islands has not abolished the ancient Corvée, it has, with justice, deprived it of its most odious principle, that of admitting privileged classes; no man, but a pauper, is exempt from its operation; nobles, priests, peasants, all *work* or *pay* according to their means; and the price of labour in Cefalonia bears so high a proportion to that of food, that the Corvée presses lightly on all classes. Four years work ought to be a sufficient space of time to complete the roads, if the Corvée were vigorously enforced: as it is not, I should say it will require nearly eight.

* I will not deny myself the satisfaction of here expressing my opinion of the character of Mr. Woodhouse, auditor of public accounts at Corfu. My acquaintance with that gentleman is slight, but he appears to me to be one of those fearless, upright, and able servants of the public, that are always wanted, and rarely found; his conduct during a late public trial exhibited his services in the most vivid colours.

SECTION VII.

Description of an Instrument for laying out Roads.

For the purpose of giving the exact degree of slope to the road where it crosses mountains, we have an instrument which enables any one to lay out roads without trouble, and with sufficient exactness; it consists of a brass, or wooden rule, two feet long or more, A B; at right angles to it are fixed two cross pieces C D, of about six inches in length; the upper edges of these three rules must be in the same plane, and great accuracy should be observed in this particular.



The rule A B is fixed to a semicircle E E, whose rim should be very broad. From F hangs a plumb line F G, the rules and semicircle are then fixed in a piece of wood or brass, K K K, the upper part of which is cut, to let the semicircle play back and forward, on a pivot P, and the lower part turned with a shoulder

L, and is stuck into two rings R R, in which it plays freely. These rings are fastened into a stick T, about three feet and a half long, and one inch and a quarter diameter, secured with an iron ring at top U, and having an iron point, with four marks M, projecting about an inch, and half a foot from the point, to prevent its going too far into the ground, and to steady it. To use it: first drive the stake firmly into the ground up to M; then stick the instrument into the swivels R R, set the rule horizontal, by means of the plumb line, the bob of which should play in hole X, and which will also show you if the stake is perpendicular; and if not, adjust it until the plumb line neither presses nor hangs away from the semicircle and hole X; now lower the rule C A D, until the bob of the plumb line coincides with the hole G in the semicircle, which indicates that the upper edge A B has an inclination of *one inch in a foot:* secure the semicircle in this position by the screw S. The instrument being thus set, at the point from which you wish the road to descend (for you should generally work down hill), take what engineers call a *boning rod,* that is to say, an upright piece of wood, with a piece at the top, crossing it at right angles, the height should be, for our purpose, the same as the instrument (figure 1), the cross piece

about twenty inches in length, figure 2. One side of this cross piece A B should be painted *white*, the other *black*: take this boning-rod, and send your assistant to a short distance, in the direction of your road, on the face of the hill, suppose thirty or forty yards, look along the upper edge of the cross rule, and make your assistant go higher up, or lower down, with his rod, until the cross piece of the rod coincides with your cross rules, and drive a picket where the foot of his rod stands, which marks the slope of your road: planting the instrument at that picket, repeat the operation; the more frequently pickets are placed, the more accurate will be the work: however trifling these details may be, no apology is necessary, as they are intended for officers who undertake road making, without being engineers, and who, therefore, require such minute instructions.

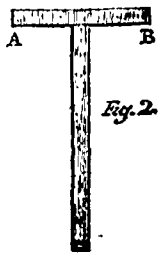


Fig. 2.

SECTION VIII.

Ruins of ancient Towns of Cefalonia.

It is said that Cefalonia was formerly called *Tetrapolis*, from the four ancient cities of *Same*, *Kranea*, *Palæ*, and *Proni*: the locality of the two first are ascertained by the ruins of their walls, still remain-

ing; those of *Same* are magnificent. The site of *Palæ*, close to the present town of Lixuri, is also perfectly ascertained; *Proni* seems not to be so. I should suppose that it was placed at the little port now called *Poros*, on the hill above which are found the ruins of gates and walls, distinctly marking the remains of an ancient town; if not *Proni*, what was it? Having neither the leisure nor the acquirements, necessary to an antiquary, I do not pretend to decide. Besides the above towns, there are still found several ruins, apparently of towers, for the purpose of keeping up a communication between *Same* and *Proni*.

The following extracts from Livy and Polybius may not prove uninteresting, as they describe the two most marked events which authentic history has recorded, when speaking of Cefalonia. The citadel, which Livy mentions as having been taken by Fulvius, may now be distinctly traced: it is the only part commanded, or where an enemy would not be obliged to mount the steep and rocky sides of the mountain, every other part seems to be well defended by nature; this point alone must have resisted solely by art. The description given by Polybius of the city of Palæ, and the plain on which Philip was encamped, is so correct, that it would be impossible to mistake the situation, had no other evidence been forthcoming. The walls of this city have nearly, if not quite disappeared, antiques have occasionally been found, and the

remains of buildings still exist, and also a tomb on the highest pinnacle of the hill; it is called the *Queen's Tomb*, and is cut in the solid rock. At Kranea the walls are still distinct.

The ruins of Same, Kranea, and Proni are all Cyclopian. On the summit of a mountain near Poros are more Cyclopian ruins; but they appeared to me rather those of a castle than of a city. Asso is said to be the ancient Nessiota; nothing appears to be left of this town to identify its site.

EXTRACT FROM LIVY.

"MANLIUS having terminated the war with the Gallow Greeks, his colleague, Fulvius, after reducing the Ætolians, sailed to the island of Cefalonia, and sent messengers round all the cities, to inquire whether they would surrender, or try the hazard of war. Fear induced them all to surrender. Being ordered to send as many hostages as each was able, the people of Nessiota, Cranois, Pallene, and Sama, sent twenty; thus the island seemed to enjoy a perfect tranquillity, when all of a sudden, the Samæans revolted, but it is not known for what cause: they pretended to be afraid, that (as their city was the most advantageously situated of any in the island) the Romans would oblige them to remove elsewhere, but whether they were themselves the authors of this

apprehension, and so exchanged peace for vain fears, or the design had been dropped in conversation at Rome, and so reached their ears, I cannot determine; however, it is certain that they no sooner had parted with their hostages, than they shut their gates: nay, the prayers of these hostages, whom the consul sent up to the walls, to move the compassion of their parents and countrymen, could not induce them to desist from their enterprize. Accordingly, as they seemed averse to peace, the consul began to invest the city: he brought with him all the machines and engines he had used at the siege of Ambracia, and what works were to be raised, the soldiers soon run them up. He battered the walls with his rams, in two different places.

"The Samæans neglected nothing that could repel the enemy, or damage their works; in two respects particularly, they made an obstinate defence. They constantly run up a new wall within the part of the outer that was beaten down, and made frequent sallies, sometimes to destroy the works, and sometimes against the advanced guards, and most commonly had the better in them; but at length a trifling device was invented to restrain them. Fulvius sent for one hundred slingers from Ægium, Patræ, and Dymæ. They had been accustomed, as exercise, from their infancy, to sling into the sea such small round stones as are

commonly mixed with the sand on the shore. In consequence they throw to a greater length, with a surer aim, and more strength than the Baleareans; neither are their slings of the same fashion with those of the Baleareans and other nations, which have but a single thong; the thongs of theirs are threefold, closely sewed together, that when the string is let go, the bullet may not vary, but as it lay firmly poised in the leather, it may be as sure as if it had been discharged from a cross-bow. Being accustomed to discharge from a distance into a small circle, they were so expert, that they were sure, not only of hitting the enemy on the head, but in whatever part of the face they aimed at. These slingers checked them from sallying so frequently, or with so much intrepidity as formerly; insomuch that they begged the Ægions, from the walls, to let them alone, and leave them quietly to deal with the Romans. However, they held out four months. As they were few in number, and some of them daily killed or wounded, while those who survived were fatigued with continual duty, and their spirits quite desponding, the Romans found an opportunity to scale the walls of the *citadel*, which stood by the sea, on the west side of the town, and from thence marched into the forum. As soon as the inhabitants perceived that their city was taken, they fled, with their wives and children, into the *citadel*. Next day they surrendered, their city

was plundered, and themselves sold for slaves. Cefalonia being thus entirely subjected, the consul left a garrison in Same, and sailed to Peloponnesus, in compliance with a former invitation from the Ægians and Lacedæmonians*."

EXTRACT FROM POLYBIUS.

"PHILIP having sent his orders to the Messenians, the Epirots, Acarnanians, and to Scerdilaidas, that they should complete the equipment of their vessels, and join him at Cefalonia, he then sailed away from Patra to that island at the time appointed, and cast anchor near a little town called Pronis; but because the country round it was close and difficult, and the place not easy to be invested, he continued his course forwards to Palæa; and perceiving that this part of the island was full of corn, and promised a plentiful subsistence to his army, he disembarked all his forces, and there encamped, and having drawn his ships to land, and thrown up an entrenchment round them, he sent away the troops to gather in the corn, while himself surveyed the city from every side, in order to discover in what manner he might best advance his works, and plant his machines against it, designing, when the allies had joined him, to use his utmost efforts to become master of the place; for

* Livy, book xxxviii, sections 28, 29, 30.

by this conquest, as the Ætolians would on the one hand be deprived of a place that was of great importance to them, since their custom was to make descents from hence, in Cefalonian vessels, upon the coast of Peloponnesus, Acarnania, and Epirus; so, on the other hand, the king and his allies, when they had gained this post, might fall with great advantage upon the country of their enemies.

"For Cefalonia lies opposite to the Corinthian gulph, extending towards the sea of Sicily; it joins closely upon the north and western coasts of Peloponnesus, being nearest to Elea, and looks also towards the south and western sides of Epirus, Acarnania, and Ætolia; the king, therefore, perceiving that the island was situated with so great advantage, as well for assembling the allies, and covering all their lands from insult, as for invading also the provinces of the enemy, was impatient to attempt the conquest of it; and because Palæa was almost every way secured by precipices or the sea, and was only to be approached by a small and narrow plain, that looked towards Zacynthus, he resolved to advance his works upon that side only, and to fix there the whole business of the siege.

"While Philip was thus employed in forming the measures that were necessary for the attack, he was joined by fifteen vessels, sent by Scerdilaidas, who was prevented from sending any greater number by some commotions that had happened in

Illyria, among the chiefs of the country; the Epirots also joined him, together with the Acarnanians and Messenians; for, as Phigalea now was taken from the Etolians, the Messenians had no longer any pretence for refusing their assistance in the war.

"When all things were ready for the siege, and the balistæ and the catapultæ disposed in every place from whence they might, with best success, repel the efforts of the enemy, the king having exhorted the Macedonians to be strenuous in their duty, ordered them to approach the walls, and to open a mine under cover of the machines; the Macedonians pursued their task with so great diligence and ardour, that the walls were in a short time undermined, to the length of about five hundred feet; Philip then approached the city, and pressed the inhabitants to accept conditions from him, and when his offers were rejected, he set fire to the timber that supported that part of the wall which was undermined: the wall immediately fell down, and the Peltastæ, who were commanded by Leontius, being divided into cohorts, were ordered to force their way through the breach, and to storm the city; but this general, remembering the engagement into which he had entered with Apelles, though three young soldiers had already passed the breach, stopped them from advancing, and would not suffer the city to be taken, and, as he had before, corrupted also the chief among the

officers; and himself at this time likewise, instead of leading on the troops with vigour to the charge, appeared struck with consternation, and spread his fears into the rest. The Macedonians were at last repulsed, though they might, without much difficulty, have made themselves masters of the place. The king, when he perceived the cowardice of the generals, and that many of the soldiers were also disabled by their wounds, was forced to raise the siege, and to deliberate with his friends, concerning the measures that were next to be pursued.

"About this time Lycurgus entered the province of Messenia with an army, while Dorimachus, with one half of the Etolian forces, made an incursion also into Thessaly, being persuaded, that by this diversion they should draw away the Macedonians from Palæa. The Acarnanians and Messenians, alarmed by the approach of the enemy towards them, sent some deputies to the king, and entreated them to raise the siege. The Acarnanians pressed him to remove the war at once into Etolia, and thus, by wasting all the country, which was now left without defence, to constrain Dorimachus to return again before he had entered Macedon. The Messenians, on the other hand, importuned him, with no less earnestness, to march to the assistance of their country, representing to him, that, as the Etesian winds had now begun to blow, he might pass in one day's sailing from Cefa-

lonia to Messenia, and fall upon Lycurgus, before he could receive any notice of his approach. This was the advice which was urged by Gorgus, the chief of the Messenian deputies. Leontius also, pursuing still his first design, supported it with all his strength, being well assured that no measure could more effectually obstruct the progress of the war, for it was easy, indeed, to transport the army to Messenia, but it was not possible to return again, till the season of these winds was passed. The Macedonians, therefore, confined within the limits of that province, must have been forced to waste the whole summer in inaction, while the Etolians, on the other hand, might have plundered Thessaly and Epirus, and destroyed all the country at their leisure.

"But Aratus, who was present, opposed this sentiment, and advised the king to advance into Etolia, since while Dorimachus was absent with the forces it would be easy to run through all the province, and to plunder it without resistance. Philip, who was before much dissatisfied with Leontius, on account of his ill conduct in the siege, and who began also to suspect some treachery from the advice which this minister had so warmly urged with respect to the course that was now most proper to be taken, resolved to yield to the opinion of Aratus. He sent orders, therefore, to Eperatus, that he should draw together the Achæan forces, and march to the assistance of the Abessenians,

while himself steered away from Cefalonia with the fleet, and, after two days, arrived at Leneas in the night *.

SECTION IX.

Description of the district of Aracli, or Heraclea.

As the district of Heraclea has, hitherto, been but little known, from the difficulty of crossing the Black Mountain, a description of this beautiful valley may not be ill placed here. The valley of Heraclea, or, as it is vulgarly called, Aracli, appears to me to be about six miles in length, and two broad in some parts, in others less than one hundred yards. It is bounded on the *west*, by the Black Mountain; on the *east*, by a ridge running along the coast, on the nothern extremity of which are the fine ruins of the ancient city of *Samos*; on the *north*, Heraclea is bounded by a connecting height, which unites the eastern ridge to the Black Mountain, of which it is a branch; on the *south*, the valley is closed by a very high conical mountain, on the summit of which are Cyclopian ruins.

The valley of Heraclea receives the waters flowing from all these mountains, which measure from *two* to *five* thousand feet above the level of the sea.

* Polybius, book v, chap. 1.

A small river of fine water flows from a deep lake in the mountain, which forms the northern boundary, and, in its course through the valley, turns a number of picturesque mills, receiving many tributary streams, which irrigate this verdant district; and, finally, reaches the sea at *Poros*. The bed of this river is gravelly, its banks covered with meadows and woods, which clothe the precipitous sides of the mountain; and through the trees masses of rock project, covered with mosses and creeping plants, which seem to attach them to their bases. The pine, the holme oak, the elm, the acacia, the myrtle, the cyprus, and the olive, are among the trees of which the woods of Heraclea are composed. Before the river reaches the sea, it passes through a narrow chasm in the eastern ridge, whose rocky sides rise perpendicularly to a vast height above the bed of the river, which is strewed with large masses that have fallen from above, where many still overhang, and threaten to crush the passing traveller. These great rocks form the base of two mountains, covered with wood, which stand on each side, like sentinels, to guard the entrance of this beautiful valley. On the southern height are extensive Cyclopian ruins; and on the northern, and by far the highest mountain, stands the convent, or rather fortress, of *Atros*, about 3000 feet above the level of the sea; it was fortified against the incursions of the Saracens,

and there is a projection of the mountain which is still called "*the look-out for the Saracens.*" On passing this rocky defile, there is a small plain between it and the sea, and enclosed by the rocks, which run down on each side to the water's edge. On crossing the rocks, to the south, you find the beautiful little port of *Poros*, formed by a jut of land, called "*the Saracen's landing place.*"

Such is the valley of Heraclea, bounded by huge mountains, on whose precipitous sides, woods, rocks, and ruins, are profusely heaped in magnificent confusion; from whose summits you behold the sea studded with islands, and the Grecian territory stretching north and south, like an immense map; your sight falls on no space by land or sea, which has not been illustrated by ancient or modern history; Leucadia, Ithaca, Zacynthus, Actium, Lepanto, and last (though *now* not the least famous), Missalongi, spread beneath the eye; while woods, hamlets, meadows, and streams, lay sheltered in the valley, forming a delightful contrast with the rude grandeur of the surrounding scenery!

SECTION X.

Proposal for the Defence of the Port of Argostoli.

THE towns of Argostoli and Lixuri are the deposits of all the riches in the island of Cefalonia, and, in their present defenceless state, they might be laid under contribution by armed vessels of any class: no batteries defend the entrance, or command the anchorage of this superb harbour, one of the finest in the Mediterranean sea.

Lixuri is particularly exposed, because, in time of war, the commandant of Cefalonia would seldom have troops enough to send a detachment to that town.

Under the above circumstances, an armed ship anchoring close to either town, might levy contributions, and, at Lixuri, land troops, and plunder the city, without there being a possibility of affording aid from Argostoli.

This state of things being bad, the question is, how to apply a remedy, at a small expense to the island, and one which may be proportionate to its revenue, for this is the only just rule in such matters. Under all the circumstances of the case, whether they regard the expense, the degree of importance attached to the island, or the topography of the place, I should say, that the most

eligible system of defence would be by *Martello towers.*

Neither the revenue, nor the importance of the island, admit of Argostoli and Lixuri being made fortified places, like Corfu; but about eight Martello towers, and a large circular fort on the telegraph hill above Argostoli, would at once give that security to the capital, the harbour, and the town of Lixuri, which they so much want. Should Cefalonia become a place of greater importance, batteries may be added to the towers, which latter would command the gorges of the former, if not placed too close, and might contain the magazines; so that the erection of towers would unite with, and greatly strengthen, any future plan of defence that might be deemed necessary.

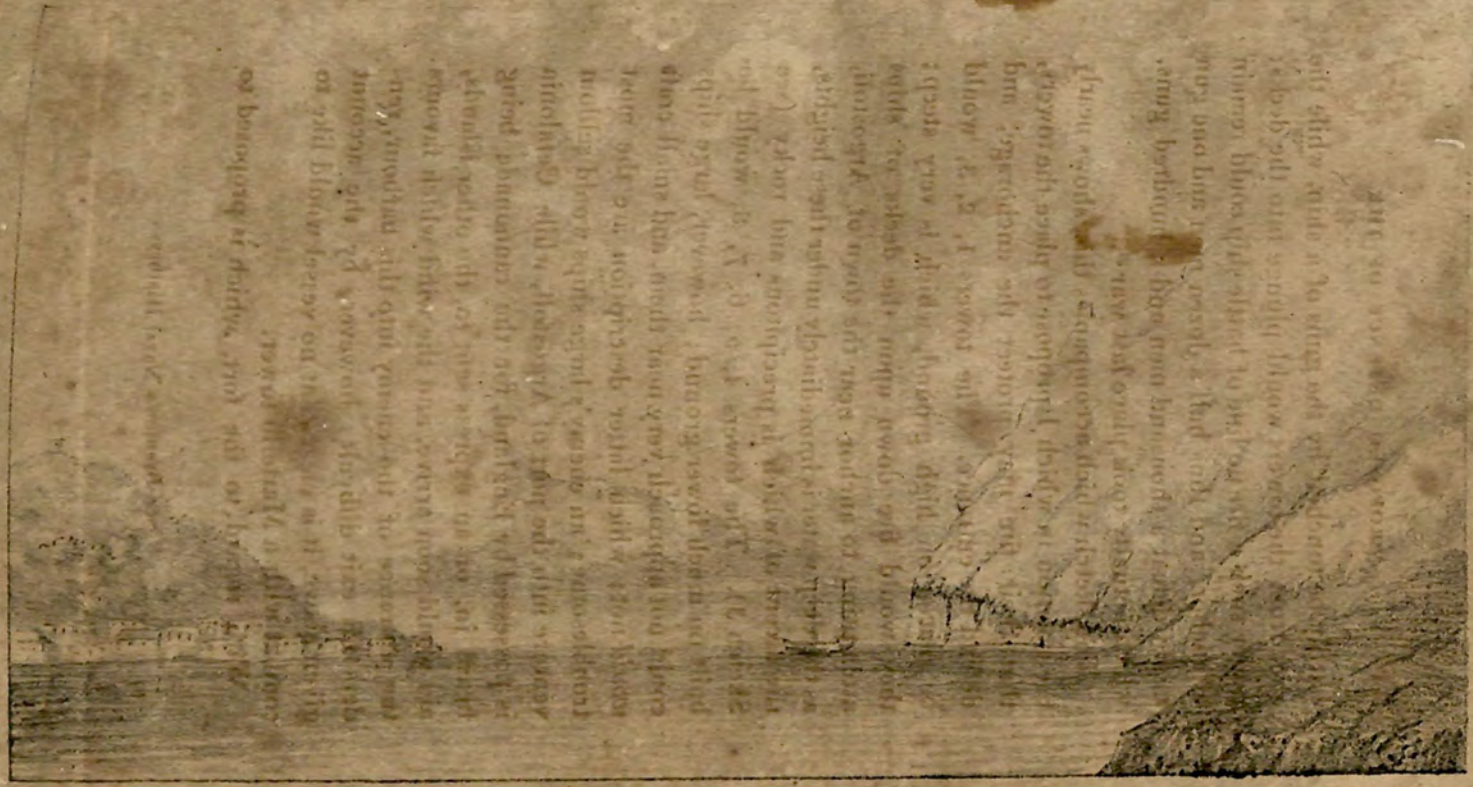
The system of coast-defence, by means of Martello towers, which was adopted in England during the last war, excited general ridicule, not because Martello towers were bad things in themselves, but because there was a want of judgment displayed in placing them. The situations for which they are calculated, are where they command an anchorage where you can only spare men sufficient to fight the guns, and where, in consequence, such men must be so protected, that a boat full of sailors cannot land, and cut them down, as would be the case in a simple battery; in many such places, and among them the port of Argostoli, where there are heights commanding every part of the anchorage, on the summits of which Martello towers could

hardly be touched by the guns of a ship, while the shot from the towers would plunge into the decks; under such a fire no line of battle ship could remain at anchor, and thus half a dozen men and one gun might defeat a thousand men and a hundred guns, which actually took place last war *.

The sketch which accompanies this, shows nearly the position in which I propose to place the towers, that their fire may protect the anchorage, and defend the entrance. The towers 1, 2, 3, would be placed on high ground, which is very steep; they would fire down upon the decks of ships attempting to anchor near the town of Argostoli, as the deep water is immediately under these heights, the ascent of which is precipitous and rocky (see Sketch 3). The towers 4, 5, 6, 7, 8, would be built on much lower ground; however, large ships could not approach very near them, and small craft *would* not; which latter description are the most troublesome; an enemy's large ships would seldom venture into the port of Argostoli, while Cefalonia is possessed by England, for the cannonade being heard in, or an express sent to, the other islands, aid would soon arrive, and the wind which favours the entrance of the enemy into this harbour, renders his exit difficult: however, by the account given above, it is clear that no vessel would like to combat with a Martello tower.

With regard to the fort, which is proposed to

* See Brenton's Naval History.



HARBOUR OF CEFALONIA

Shewing where Martello towers are proposed to be placed

be placed upon the telegraph hill, the *circular* form seems the most suited to the place; a fort of this description was in the contemplation of the late Sir Thomas Maitland, to whom the writer spoke about the towers, which Sir Thomas approved. Afterwards, while going in his boat on board his ship, that lay in the harbour of Argostoli, he again began to speak of the fort, and asked Lieutenant Colonel Whitmore, the commanding engineer, what the expense would be? The lieutenant colonel replied, that he had built a circular fort somewhere in England, and that it cost about £100,000 sterling; upon this, Sir Thomas turned round in the boat, with a long and loud whistle. From the manner in which he had spoken of the towers, I have no doubt that he would have built them; but after this *whistle* I thought it best to let at least a year pass, without again mentioning the subject *.

Such appears to me to be the best mode of putting the towns of Argostoli and Lixuri in a state of defence against the insults of an enemy's cruizers, or any attack, short of one intended for the conquest of the island, and even in that case, it would greatly strengthen the resistance of the garrison, which would not be much weakened, even in numbers, by the absence of the men required to man

* Not that Colonel Whitmore had any intention of estimating the fort at Cefalonia at £100,000, but knowing Sir Thomas's economical system he mentioned this jestingly.

the towers, who, indeed, could be withdrawn in half an hour if necessary; except from the Lixuri towers, where the eighteen men required to fight the guns would be able to defend their towers, and occupy a strong detachment of the enemy, or, remaining unmolested, would still protect the town.

I have not made an estimate, but I will venture to say, that *twenty thousand pounds* would defray the expence of the works proposed. The eight Martello towers may be averaged at eight thousand pounds, and the remaining twelve thousand would cover the cost of the fort. The soldiers would work for a small daily pay, and the stone is on the spot. The expence of such works depend much upon the arrangements made for the execution; and upon the judgment used in their construction. A man who would finish a Martello tower in Cefalonia, in the perfect style of those constructed in England, would throw away so much money. Well made doors, good locks, good hinges, and all such details, are not necessary. *The strength of the wall* is all that is important; in short, the expence depends upon the person who has the direction, and may be exactly estimated; but I think £20,000 would cover all; and this sum does not appear to be beyond what may be afforded by the general government. I found this opinion upon the following reasoning: each island, after paying the expences of the local

government, sends an overplus to the general treasury at Corfu; out of this sum is taken the expence of the general government; still there remains a large surplus in the treasury, and this balance ought to be applied to the improvements, which each island requires, *in such proportion as each island has contributed to the general treasury.* It would be as impolitic as unjust, to lay out, upon improvements at Corfu, money, to which other islands have a claim. Corfu benefits quite enough by being the seat of government.

The present lord high commissioner, Lieutenant General Sir Frederick Adam, has great activity, united with a thorough knowledge of the resources and wants of *all* the islands, and he will probably establish a system for the expenditure, founded upon a general view of the subject. Considering the matter in this light, I think Cefalonia may expect full *thirty thousand dollars*, to be annually applied to improvements; of this sum I would apply *five thousand* each year to the proposed system of defence; commencing with the towers, and ending with the fort; after some other works were completed (of which I shall immediately speak), I would apply the whole 30,000 dollars to the defence of the harbour; by this means, a gradual but certain progress would be made, without being felt by the finances of the island.

Being upon the subject of defence, it may be well to mention, that there are two fortresses in the

island of Cefalonia: one called Fort St. George, about three miles from Argostoli; the other called Asso, in the district of Erisso, on the north-west part of the island. The first is in great want of repair, but might be made strong; at present, it is the only place in which the garrison of the island could make any resistance: the situation is particularly healthy.

Asso is also healthy, and a curious place; the fortress was built on a peninsula by the Venetians, towards the end of the 16th century, and contains about a hundred and thirty acres within its walls, which crown a precipice in every part. The height of this fortress is very great: without having measured it, I should think full one thousand feet above the sea: and it is one of those places, whose natural strength and grandeur strike the mind with an idea of its being impregnable. The accompanying plan, drawn by Lieutenant Maclean, of the 90th, will show what Asso might be made, should a strong fortress be again of importance in the island. The ground within the walls is fruitful, and the large cisterns, built by the Venetians, are in a tolerable state of repair. The wall is weak in itself, but owing to the steepness of the ground in front, a stronger one is scarcely required. There is no height equal to that of the fortress, within cannon shot of it, and the isthmus could easily be defended, as the approaches to it must be made *down hill;* while the high ground, on the side

next the fortress, commands the other, so that it would be difficult for besiegers to cover themselves from so plunging a fire. The Isthmus might easily be cut, and a heavy sea would pour through, during all northerly and southerly winds. The harbour is, I am told, rather dangerous for large ships to enter, but it is very desirable that an accurate survey should be made of this place, whose great strength may again become of use. The Venetians built it as a place of refuge for the Christians, against the victorious Mahomedans; and it may again come into play, for the Turks are not the only barbarians in the world, though they are, perhaps, the most savage; and we may yet learn that the north is more to be feared than the east; although the former is *professedly* Christian, penetrated in all directions by missionaries, and brimfull of Bibles. The town of Asso is prettily situated in a small valley, touching the Isthmus, and is very healthy, and well supplied with water.

SECTION XI.

Of Improvements at Cefalonia.

HAVING stated that there are other works which require being attended to, before the whole sum, allotted for improvements, could be dedicated to

the defence of the port; I shall proceed to state what those works are, in the hope that they may be attended to, sooner or later, by the general government.

The *first*, in every point of view, is that of draining the marsh of Kranea; which, as I have remarked in a former part of this memoir, must be done by cutting off the fresh water. The details need not be farther entered into here.

The *second* is the construction of a prison, and tribunals; the plan and elevation of which has been submitted to, and I believe approved of, by the present lord high commissioner.

The *third* is the erection of barracks for the troops; a plan and elevation of which has also been submitted to government.

With regard to the *first*, the marsh of Kranea is the cause of much ill-health in the town and neighbourhood of Argostoli, as malaria fevers are predominant every summer; and unless a stop is put to the progress of the marsh, this town will become more unhealthy every year. The bridge built by Lieutenant Colonel De Bosset has been said to increase the evil. My own decided opinion is, that this idea is erroneous, a constant current flows either in or out, through the openings, and no stagnation takes place in consequence of this bridge, which is really a great and most beneficial work, and one which will always redound to Colonel De Bosset's credit: besides this bridge,

Colonel De Bosset has left many traces of his exertions for the improvement of Cefalonia.

With regard to the *second:* the construction of a prison, and tribunals, is of the utmost importance to the administration of justice. The ground has been already purchased, by order of Sir F. Adam, for these buildings. The present prison has all the defects that a prison can have, it is easy to escape from, and wretched for those who *choose* to remain; for, at one time, the confinement amounted to no more than a voluntary obedience to the law, on the part of the prisoners. Sentries are obliged to be locked up in the prison with the prisoners, to the great risk of their health. The present room where the judges administer justice is so small, and the heat so overpowering, that those who are shut up in it many hours cannot do their duty; it has often been complained, that judges have been seen to fall asleep upon the bench, and this should not be a subject of surprize, for neither zeal nor snuff can support a man who is at once oppressed with heat, and foul air.

As to the *third* object of improvement, the barracks; it would relieve the revenue from the heavy expense of hiring quarters, amounting to about five thousand dollars yearly; and such quarters too! holes, in which a horse would hardly be put in England; and which have cost many lives.

In speaking of the health of soldiers, I do so with the more confidence, because in every hot

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country where I have been, I have discussed the subject with the most experienced and ablest medical men; now had I in any instance found a medical opinion adverse to my own, I should, of course, feel doubt upon the subject. I by no means speak of the treatment of disease *when it appears*, I speak of the *causes of disease*, and the *means of preventing it*. And I have formed these opinions from a long acquaintance with hot climates, and with the habits of British soldiers. These causes, I think, are as follows:—

1st. The natural effect of a hot climate upon northern constitutions, and this I hold to be the *least* cause of death in the Ionian islands.

2d. The neighbourhood of marshes, or filth of any kind, particularly dead vegetable matter.

3d. Sleeping exposed to night air.

4th. Sleeping in numbers in *low* barrack-rooms, and those ill ventilated.

5th. Want of attention to their own health, which is conspicuous in soldiers, and in nothing more than that of concealing the first attacks of illness, to avoid going into hospitals, which they dislike; and, in hot climates, the progress of disease is so rapid, that in a few hours a patient, and particularly a drunkard, is past the power of art.

6th. *Drunkenness*, which, if it does not produce disease, gives great force to its attacks; for drinking inflames both the brain and the liver, the parts most liable to disease in warm climates.

7th. Exposure to the sun, bare-headed; I have seen soldiers stand in a burning sun, their heads bare, and their feet in the water (washing their trowsers, which also made them stoop); thus they had, first, the sun's direct rays on close cropt hair, affording no protection to the head. Secondly, the reflected rays from the water. Thirdly, the blood driven from the extremities, by their being in water; and, fourthly, rushing still more violently to the brain, in consequence of the stooping posture.

8th. Exposure to the sun, without exercise sufficient to carry off its effects.

9th. Want of amusement.

The remedies for the above causes are not always easy, sometimes they are impossible; but trusting to the fairness of medical men, who, generally speaking, are ready to admit the result of observations made by old soldiers, I will venture to state mine, for their consideration. I take the *numbers* and answer in order.

1st. For this cause there appears to me no better remedy than wearing flannel, to which most men can accustom themselves: it is folly, as well as cruelty, to *order* men to clothe themselves in flannel, because, as all constitutions differ, it may injure some; but I am sure, that if two regiments were placed upon an equal footing in every other respect, and that the soldiers of one wore flannel shirts, and those of the other linen shirts, the

average of sick men in the regiment wearing flannel next the skin would not be above half what it would be in the other; and the experiment might easily be made. The reasons why flannel is so useful are known to, and I believe admitted by most medical men. Instead of flannel being an *exception* to the general habit of wearing linen shirts, the reverse ought, in my opinion, to be the case.

2d cause. The remedy is, in the choice of situation, and in cleanliness. The malaria of hot climates has been long a subject of much discussion. It is observed of malaria, that it is carried to a great distance, and to a great height, by currents of air; arising from marshes, it ascends the sides of the neighbouring hills, and is conducted through narrow valleys to places at a considerable distance. Malaria is known to exist on the tops of hills. It *spreads* and *rises*, but it does not appear to *descend*, and I never saw an instance of any place being subject to it, which was divided from the marsh by a ridge of hills; although such places were much nearer the marsh than places considered very dangerous, and although the latter were high, and apparently safe; on close examination, some gully or valley was found to conduct the malaria: in short, it seems to be a vapour, which in hot weather arises from putrid vegetable matter, and in calm weather will creep up high grounds, close to where it is generated. When there are

gentle summer breezes, it flies with them along the valleys, until it becomes so dispersed as to lose its malignity, which happens sooner or later, as the valleys through which it passes are narrower or wider. The best situations for troops, then, are those which have *hills, towns, woods,* and even single walls, between them and the marshes. The first is efficacious, the three last are doubtful preservatives, but they at all events tend to weaken the effect of malaria, by breaking its fearful density; for the same reason, sleeping with musquito curtains is supposed to be a great defence against the effects of this pest. I would, therefore, never encamp men, or build a barrack, exactly on the *summit* of high ground, near a marsh, but on some spot a little way down, on the side away from the marsh; and, thus curtained from it, I am inclined to believe that no injury would be experienced from malaria; which, however thickly it may rise, would be dissipated on reaching the top of the hill. I will take one instance to exemplify what I have said; the castle of fort St. George, in Cefalonia, is reckoned healthy; it is placed on a hill which rises gradually from the marsh of Kranea; during the summer, the prevailing northern breeze blows the marsh effluvia directly towards the castle; but the hill on which it stands divides the valley into two smaller vallies, and is very high; that part (immediately under the castle) towards the marsh, and on either side, being very

abrupt. The high walls of the castle, and the interior, which is still higher, cover the barracks from malaria; both they and the town being placed on the *opposite* slope: the town is quite under the castle. Here it is evident, that, in the first instance, the current of air carries the malaria up the valley on each side of the castle hill, whose abruptness splits it, as it were; while at the same time, should the calmness of the weather permit the malaria to creep up, both town and barracks are screened by the hill, and the walls of the castle. I do not pretend that this, or a few other instances, prove the truth of the doctrine, but they argue strongly in its favour; sufficiently so, to induce medical men to make further observations to ascertain the fact. When the quarters of soldiers are necessarily exposed to the effect of malaria, all windows and doors towards the side of the marsh should be closed at night.

3d cause. When people sleep exposed to the night air, it is well known, in all hot climates, that they are likely to get fevers. Now the British soldiers *always* do this, and it should, if possible, be avoided.

4th cause. This is the reason why the soldiers sleep either quite out of doors, or with their windows open; for barrack rooms are low, and contain as many men as can be crammed into them, from a mistaken idea, that it is *economical;* quite forgetting what a soldier *costs*. Now, putting inhu-

manity out of the matter, we know very well that the most costly purchase government makes is a soldier: and yet, to save a trifling sum in the construction of barracks, we risk his life, which is a thousandfold more valuable. It may be said that every one knows this, and that it is of no use repeating what is known: then let it be asked, why are not barracks built in all our foreign stations, fit for soldiers to live in? I have never seen, in any colony, a properly ventilated barrack; in England, where we have not a hot climate to deal with, we have good barracks; but nowhere abroad; even where the houses, into which soldiers are put, are good, they are too small; in rooms built for one, two, or at most three people, we stuff a dozen soldiers, with the thermometer at 90°; and then we wonder that they die! They are obliged, from want of air, to sleep with both windows and doors open; and even then they can hardly bear the heat: indeed it is common to find two, and often three men obliged to sleep in the same bed, in the hottest part of the summer; and the heat makes them always sleep perfectly naked. The effect of this indecent habit, to which they are driven by necessity, has not only produced a horrible degree of immorality among the soldiers, in some instances, but is also a decided cause of illness; for, after being heated by a hot sun, the whole body is exposed, at night, to the perilous effect of currents of cold air, which the soldier

seeks, or which arises from a change of weather during the night; all this proceeds from want of *height in proportion to the surface of the floor;* people, quite ignorant of the subject, measure the *length and breadth* of rooms; and, from *that base,* calculate how many men can sleep in them; now the *height* is of more importance: put 100 soldiers into a room, which, as to surface of floor, contains them with ease, let that room be ten feet high, and you will have disease (I speak of the summer season); put the same men into a room of equal length and breadth, but which is *thirty feet high,* and you will not have disease. The doors and lower windows will be shut at night, the foul air will be let out at a great height, by ventilators. The men will sleep with their flannel shirts on, and if in single beds they will be comfortable, instead of miserable. Now look at the reverse; to save expence in hiring quarters, not only 100, but many more than the room ought to contain, even relative to its surface, are crammed in; beds are placed as thick as they can stand, the lowness of the ceiling soon makes the room like the black hole of Calcutta, every door and window is opened, every man throws off his shirt: the windows and doors often look to the south and west: the heat, left by the setting sun, is intolerable. Some sleep outside, unable to endure it and the millions of fleas and bugs which it generates. In the night a cold dew falls, a breeze blows malaria

into the barracks; or, perhaps, the night continues oppressively hot, and the soldier, restless and miserable, is exposed to disease. The very state of annoyance he feels is quite enough, with many men, to produce illness, and create *bile*, that great enemy in all hot climates. Now in such barrack-room I will venture to say, that *at least* two men out of the hundred will die between June and October: suppose a drilled soldier costs government £100 (and I believe his value to be far more, when the expense of his transport to a distant station is considered); but say one hundred; well, here are two hundred pounds paid annually for this room, and, if an unhealthy season occurs, a great deal more; I think I may venture to average the deaths of each regiment, in the Ionian islands, at twelve men, or about two per cent.; this is a very low average: of these, I imagine, one half die in consequence of being badly quartered, in badly constructed, and badly situated barracks. Now here we have a loss of thirty men annually, out of the 3000 forming the garrisons of the Ionian islands; this in money is £3000. I ask whether, as a mere matter of economy, it would not be better to build proper barracks? and this expense does not include the great cost of *hiring* quarters. In short, the necessity of building barracks is evident, take the matter in what light you please.

To return to the height of rooms; I appeal to

the good sense of every medical man, whether this is not of the utmost importance in a hot climate: I do not speak of simply high rooms, in the common import of the expression, because, in reference to architectural beauty, what is required in a private family, where one or two people sleep in a room, will *not do* where the room is *filled* with people; but I mean a high room *in proportion to the consumption of vital air*, a high room in proportion to the unnaturally crowded state of a barrack; a room, into which a body of fresh air may pour, in sufficient quantity to destroy the disease with which it may be impregnated by one or two unhealthy men: for this purpose, barracks ought to be of a height, which, in the eye of an architect, would be, perhaps, quite disproportioned to their length and breadth; it is the health of the man that is in question, not the beauty of the building; and here lays the great error of many commanding officers; they calculate by *length and breadth* only, as I said before, and not by *height*. This does very well for the momentary cantonments of an army in the field, or rather I should say very *ill*, for I believe every man, who has commanded a regiment on service for any time, dreads being quartered in a village (except in very wet weather), as the soldiers are much more healthy in a good bivouac, where there is no marsh; but an army in the field does many things, which it would be folly to do in permanent quarters; an army will

encamp in the midst of a marsh, because there is no choice, but that is not a reason for building a barrack in a marsh. The *length, breadth, and height* of the rooms, is the rule to go by, in estimating the number of men they should contain. And it is very desirable that it should be established, how many cubic feet of space each man ought to be allowed. In calculating the interior space of a redoubt, we allow eighteen square feet to each man, but this is where the height is unlimited, and will not do where there is a roof; the question is, not what room he wants for his avocations, but what air he wants for his lungs. Now if (as I believe no one acquainted with hot climates will deny) it is full of danger to admit malaria to a sleeping man's lungs, and that a man consumes about a thousand cubic inches of air per minute, we have something by which to calculate the size of barrack-rooms: for instance, I believe it is judged, that men respire at least twenty-five times per minute, that at each respiration they consume about forty cubic inches of atmospheric air, $\frac{25 \times 40 \times 60 \times 8}{1728} = 277$ cubic feet of pure atmosphere, consumed by one man in eight hours. By this we find, that if a man was put into a room containing 277 cubic feet, and that the outer air could not penetrate, that man could live eight hours, at the expiration of which period he would be dead; and he would be ill, and begin to suffer the pains of approaching death, from the moment he was shut

up; because a scarcity of pure air, and an abundance of bad air, produce illness long before life becomes extinct: a room of this size would be about six feet square, by eight feet high: but as rooms are never sealed hermetically, we have to take another view of the subject, and divide it under two heads, *viz.*

For Health.	*Against Health.*
1. Entrance of pure air through crevices below.	1. Consumption of air by the man.
2. Exit of bad air through crevices above.	2. Entrance of bad air through crevices below.
	3. Diseased air from unhealthy men who sleep in the same room.
	4. Heat of climate.

Allow the entrance of pure air to cancel the consumption of air by the man, and the exit and entrance of bad air to balance each other; this appears fair, because the greater or less salubrity of the situation may turn the matter in favour of either side. We have then to deal with the two remaining points, diseased air, generated by unhealthy subjects, and the heat of climate; to oppose these, allow each man an increase of 123 feet, making, in all, 400 *cubic feet of air*, which I conceive to be the *least* that can be allowed in a hot climate, and which I do not think would be suffi-

cient, but for the absence of men who are on guard, servants, sick, and married men, which always prevents any room having its full complement of people. Now I am sure every surgeon, who wishes to see an empty hospital, will agree with me, that commanding officers of regiments ought to divide the cubic contents of each barrack-room by 400; and that quotient will give them the greatest number of men it is calculated to contain, or *that they should be suffered to put into it.* It is well known that ignorant lieutenant-colonels are always inclined to squeeze numbers of men together, to give room to favourites, to staff sergeants, and to make stores and orderly rooms; in England this does not happen, such places being provided, but abroad they are much wanted, and ought not to be made the cause of crowding men in their barracks, which is often, nay, generally the case.

5th and 6th causes. The want of attention, on the part of the men, to their own health, is very great, and very natural; they are generally young, and never think of illness till they are attacked: they do not like to go into the hospital, and conceal their illness until it gains the better of their resolution, and their strength; and they also prescribe for each other, a practice which cannot be prevented, unless by making the hospital a place of *more comfort* and *less medicine.* This must depend on the character of the regimental surgeons, more than

upon regulations; and therefore does not come within my subject. The soldier should, however, be strictly watched, and exhorted always to speak out, when he feels unwell; he ought, in every way, to be encouraged by the medical officer, and never repelled by roughness of manner. Among other causes of illness is negligence of their bowels, and this often proceeds from want of latrines in sufficient number; wherever difficulties and delays oppose the wants of nature, irregularity first, and illness next, are the consequences. The drunkenness of great numbers, of course, influences their health; and also that when violently heated they throw off their coats, waistcoats, and stocks, and place themselves in strong currents of air. These things can only be remedied by explaining to them the danger of such imprudence. A lieutenant-colonel ought to instruct and admonish; this is rarely done: punishment is the great resource of commanders who are ignorant or idle. However, if neither admonition, punishment, nor the fear of illness, will prevent the ldiers' drinking, they must abide the consequence of their own folly.

7th cause. The only remedy for this is a positive prohibition, which is easily enforced.

8th cause. There are few points which seem less generally understood, or more clearly proved, than the fact, that exposure to sun, without exercise sufficient to create free perspiration, will produce illness, and that the exposure to the sun with

sufficient exercise *will not* produce illness. Let any man sleep in the sun, he will awake perspiring, and very ill; he will, perhaps, die. Let the same man *dig* in the sun for the same length of time, and he will perspire ten times as much, and be quite well. The fact is, that not only the direct rays of the sun, but the heat of the atmosphere, produces abundance of bile, and powerful exercise alone will carry off that bile. The alarm of people on the subject of fevers is sometimes quite laughable. I have seen officers walk about in the West Indies during the yellow fever, with vinegar bottles to their noses; and in the Ionian Islands, I have seen a whole regiment put to bed for some hours at mid-day, for fear of the sun! men who daily eat a *pound of meat, quantities of vegetables,* and *a pound of bread,* drinking like fishes, taking no exercise, going to bed at night about nine o'clock, and rising at five. Now *ten or twelve hours* of bed, full living, and no exercise, in a hot climate, is enough to *create* disease. I have heard some things proposed for preserving health, much too ridiculous to repeat; in short, there is no end to the fancies of men under the influence of fear of climate; they become so many old women when this nonsense gets hold of them. No one is fool enough to maintain, that a hot sun will not produce more injurious effects on some constitutions, and less on others; or that men will not, generally speaking, enjoy better health in their own climate than in a foreign one; but the

bad effects of sun are exaggerated to a degree, by some British officers, that is not only ridiculous, but perfectly contemptible; a pretty sight, truly, to see officers unable to show their noses without parasols; is this the way to give a military spirit to a corps? No; these are the effeminacies which lazy and bad officers introduce in hot countries, and which spoil troops. I do not say, that an officer is *never* to use an umbrella, or that it is not wise for soldiers to avoid the noon-day sun, by staying in their quarters; on the contrary, I think there is a certain latitude in all things; but it is very unsoldier-like to see officers on duty with parasols, while the private soldiers are exposed to the sun or the rain. These are things men should take in common.

Sir Frederick Adam has kept for some years, an account of the comparative health of soldiers employed on public works, and those who had nothing to do but garrison duty, and it has been found, *that the soldiers who were at work on the public roads were far more healthy than those unemployed.* I cannot be precise as to the details of Sir Frederick's experiments, I only know that he made them with great care, and the result always proved to his satisfaction, that *labour* and *health* went hand in hand. Two companies of the 8th regiment were employed upon a military road in Cefalonia, between Argostoli and the Fort St. George, for nearly two years; this road has no shelter from the sun,

exposed to which, the men worked all day; yet they were quite healthy; which was not the case with the rest of the men of the regiment who did not work; and their health was attributed to their labour, by four medical men of acknowledged professional talents, Dr. Cartan and Dr. Scott, of their own corps, and Dr. Kennedy and Mr. Muir, of the medical staff. I had no doubt of the fact myself, having formerly tried the experiment in the Island of Bermuda, where the heat is much greater than in Greece; but I have never acted without the full concurrence of medical men, as no commander has a right to act from his own single opinion in cases of health; yet, in the face of facts, men are sometimes met with, who would so coddle soldiers, as to render them unfit to bear arms. The fact is, that such people will not take the trouble to search for the cause of disease; it is more easy to lay every thing upon the sun; whereas, if they would think and observe, or read the thoughts and note the observations of others, they would perceive, that more diseases are caught in the *night* than in the *day*, and that the chief cause of illness in the Ionian Islands is the *exposure to the malaria while sleeping, and drunkenness.* Wherever stagnant water is found, there will also be found malaria, the smallest pool will more or less produce this. A detachment was sent by me to Lixuri, to direct the public works, and three men died. The whole of that district was unhealthy that year, but the *mortality* was con-

fined to this small detachment; when inquiry was made, it appeared, that the men who died had been drinking furiously, and, on dissection, a *prickly pear was found, whole, in the stomach of one of them!* Here we find two causes operated against the health of this detachment, *drunkenness* and climate, who can say that the drinking was not, *alone*, enough to do the mischief? But it is more than probable, that the men who died had, when drunk, fallen asleep in the sun, on the edge of some pool or ditch; indeed men, even when sober, are apt to lay down in the shade and fall asleep, during which the sun, having got round upon them, they awake with a mortal disease upon them. Such deaths are falsely attributed to climate. In the above case, an old Irish soldier of the detachment warned his comrades of their fate: "Be J—s if ye go on that way, you will never see the end of the week." The drinking must have been *sharp*, when it drew forth such a commentary from an Irishman, who told me, that he himself liked "as much as was *wholesome*." What his measure of salubrity was, I did not inquire, but have no doubt that it was pretty nearly as much as most medical men would recommend in a warm climate!

I cannot help thinking that soldiers, instead of wearing out their night-caps at twelve o'clock in the day, should wear out their shoes, by being made to work, or by long marches with their packs on, manœuvring over the hills for two or three hours,

though not at noon day, because marching is more violent exercise than working, and to *over*-heat and fatigue men is as bad as the contrary extreme. In referring to the ventilation of barracks, I ought to have stated a circumstance which happened at Cefalonia: a long barrack room occupied by the 8th regiment was particularly unhealthy. On examining, I found it had no door, or window, to the north, although plenty to the *south*, and one door at the *east* end. I had windows pierced to the north, and from that moment there was no more sickness in that room than in any other: all barracks should have a northern aspect in these countries; the northern breezes are wholesome; the southern the contrary.

9th cause. I attribute much of the drinking and ill health among the troops to the *want of amusement*: the soldiers, uncomfortable and crowded in barracks, seek comfort in wine houses. The want of occupation in a great measure sends them to these infernal drinking shops. There is always a great love of manly games in the British soldiers; but there is a certain degree of help required to call this forth; the officers must *join* their men, the necessary things must be purchased. In good regiments, this fine spirit and union of officers and privates exists, in bad regiments it does not; a piece of ground should be allotted, in the neighbourhood of every barrack, where several ball courts should be built, with balls, bats, quoits, &c. This ground

might be given in charge to a soldier, appointed exclusively for that duty in every regiment, and prizes should be given periodically; these games are ordered by his majesty's regulations to be encouraged by commanding officers of regiments; but there appears to be some want of excitement, for there are few regiments in which they are carried on with any spirit, while the dull and eternal squad drill, alternates with mounting guard and getting drunk. A piece of ground such as I have mentioned would not be expensive, or difficult to find, in the neighbourhood of every barrack abroad, and would be a great pleasure to the soldiers, besides being very good for their health: the fact is, that amusement is always a *source of health*, when attended with exercise; and the want of it a *source of disease*. While the war lasted, the minds of the soldiers were occupied with hopes of service, they looked forward from day to day to some enterprise, some change, and passing events took up and interested their attention; but now that peace leaves them long in their several stations, their lives are monotonous and dull: the soldier hates peace, and he is right; why should he like that which blasts his prospects? What is a soldier in a colony, in time of peace, but an exile? War is his trade, and he is right to love it; and when he is thus deprived of his occupation, every exertion should be made to excite him to manly sports, and facilitate the enjoyment of them: without this, he

will unquestionably pine and droop, seeking comfort in drunkenness. This spirit of exertion, and unceasing occupation, can only be produced by the lieutenant colonels of the army, on whom more depends than upon any other rank; and unfortunately some of them possess genius of so sedative a nature, that they not only fail to kindle, but effectually extinguish this spirit. It may be said, that all this is wandering from my subject; but I deny this, it is the duty of every officer to make observations upon every thing which relates to the health and happiness of the soldiers; and the more, where his avocations have given him opportunities of doing it with effect; these observations are always useful in some degree, and if just, they will be fairly considered by those in authority. A barrack is quite necessary at Cefalonia, from local causes; but it is also necessary from general causes; and in touching upon the subject, it is right to take it in its full extent; it admits of a far more detailed discussion; and there are many medical men, whose knowledge of soldiers and colonies enable them to write usefully upon this subject: they should do so. In short, every thing which communicates information must do good: it by no means follows that a writer is correct, or that his opinions are to be adopted; but by being made public, they will be considered, and draw the attention of abler men to the subject; for it must be remembered, that, although the gold mine is

worked by the engineer, it is generally discovered by the peasant.

SECTION XII.

Expence of Improvements.

I HAVE said, that the general government may devote 30,000 dollars yearly to the improvements required in the island of Cefalonia. I have stated what improvements are most necessary; it remains to give some idea of their expence, and how it may be covered. The cost of the towers I have already spoken of, and if 5,000 dollars yearly be applied to their construction, 25,000 remains for the tribunals, the prison, the barracks, and reclaiming the marsh; but I would at once raise a large sum to begin with. The first step I should propose for raising this sum would be the sale of the suppressed convent lands: by keeping these lands, government loses, and it is bad policy, for, being let on very short leases, the occupiers have not interest sufficient in these large estates to do justice to them. The convents themselves, which were fine buildings originally, are going to ruin; they are not worth repairing when nobody inhabits them, nor can they be let; in short, every one must be aware, that the public will always prove a losing landlord, and its estates are more loss than profit. If sold to private people, they would at once be turned to the best account; while

the money paid for them would be more profitable to government when lodged in the public treasury, or expended in useful improvements. It must, surely, be admitted, that a well-defended harbour, or a well-regulated prison, or a handsome building for the administration of justice, or the clearing a pestilent marsh, does more honour to a government, and is more profitable in *actual gain*, than squeezing the rent of a corn-field or a vineyard from the purse of a peasant, or bargaining with him for a short lease: it is clear, that, in these bargains, it must wholly depend on the individual character of the government agents, whether the public is cheated or not, because it is impossible to have checks upon them. A president of Cefalonia may turn these lands to his own advantage, with great ease and security, and so may those under him. These lands would sell for, from 50,000 to 80,000 dollars; that is to say, they would pay the expense of any *one* of the public works proposed. But suppose that the government do not allow of this sale, for some reason unknown to the public, still these works may proceed with sufficient rapidity, by the application of the money raised on the sale of the houses now used as prisons for the tribunals, by the money produced by the sale of the reclaimed marsh, which, being close to the capital, would be very great; by the money saved in rent, now paid for quarters, and for several public offices, which last would be removed into the building for the

tribunals; and also, by whatever sum the government thinks fit to allow to the island annually, for the purpose of erecting public works.

If the Ionian government were in debt, such expences would not be proper, but as the money is not wanting, is it not better that it should be employed in works, which produce a saving to the public, and are handsome in themselves, than lay idle in the treasury? Such works improve the state of society, they draw capital into a country, they please the people, improve the revenue, and throw money into the pockets of the labouring classes. For fifteen years the people of Cefalonia have been paying for lodging troops, for quarters, which the government are obliged to take by force, as the inhabitants do not like to let their houses for the price fixed on by government, or, indeed at any price. Now had 50,000 dollars been expended at *first*, fourteen years ago, the people would have been pleased, the troops would have been comfortable and healthy, many lives saved, and the government would now be reaping the advantage. It is not by the erection of useful public edifices that the finances of a country are injured, but by being dribbled away in unproductive trifles, and paying idlers. When Pombal became minister of Portugal, he found the finances ruined, and *twenty thousand clerks* employed in the department; he at once reduced their number to *thirty-two*; yet Pombal built almost all that is magnificent in the

town of Lisbon, and restored the finances of the country. Here then we have a lesson: it is not every leaf in that great man's book which does him equal honour.

SECTION XIII.

On Coast Guards.

THE great danger of getting the plague from the Greek coast, gave rise to the bad system of obliging the peasants to furnish sentries at certain points of the coast, in order that people should not land, except at those ports where health offices are established; a plan more harassing to the people, or more useless, could hardly have been imagined. It is evident, that clandestine landings will be made on those days when, and at the places where, the friends of those who wish to land are posted. Such people are never strangers, they are always either islanders, who wish to avoid performing quarantine, or smugglers, who want to avoid both quarantine and the custom house. Strange as it may appear, the peasantry of Cefalonia seem to have no dread of the plague, although they have so lately suffered under this terrible scourge, *introduced by smugglers* in the village of Comatata. They not only will not endeavour to prevent clandestine landings, but hold it to be a point of honour to conceal all

such transactions, and paralize the efforts of government to detect them. With them it is the "good cause" to which they are never faithless. If it were simply a mater of smuggling, the thing would be trifling, and particularly as smuggling is not carried on to any great extent; but the whole island may be depopulated; thousands may in a few hours fall victims to the dreadful malady brought among them by those, who, for their private convenience, break the quarantine laws. A little consideration will satisfy any body that no punishment can be too severe for the crime of clandestinely landing; *death* has therefore been pronounced against those who break the laws of quarantine.

Where such difficulty of detection exists as to render it impossible to discover the offenders, it matters little what punishment is decreed. The system of guards of peasantry, as I have said, is of no use; it aids concealment, rather than discovery, the sentinels are in the service of the enemy! But to find out how to remedy this crying evil is very difficult. The best mode that I can devise is as follows:—

The chief places where clandestine landings take place in Cefalonia, lay along the east coast, between Scala and Guiscardo. This coast is everywhere dominated by very high and abrupt ground, from which the whole channel is discoverable; on these heights I would, at the six most prominent parts, build guard houses, to contain twelve men each.

Twelve foreigners should be hired for each island, at 15 dollars per month per man, with a reward of 500 dollars for every boat taken in the act of landing people clandestinely; these twelve strangers should have authority to call out the people of the country to their assistance in case of need; they should have no particular station, but be allowed to make their own arrangements; they should, however, be changed from island to island, every year if not oftener. It is true, that the expence of 2,160 dollars would be annually incurred, but I think the object worth it. The great sum offered for captures would be more than the smugglers could afford to bribe the guards to let them escape. I am almost sure, that one or two captures of this kind, and the reward being paid down at once, would altogether stop people landing secretly, the risk would be so great. I would also make the punishment imprisonment and confiscation of property, to the advantage of the captors, instead of death: not that I have any doubt of the justice of inflicting death in these cases, but because I think such severity defeats its own object. It has been argued, that it would be better to disperse these guards along the coast: I do not think so. The boats which land people secretly have often from ten to twelve armed men on board; such a crew would both bully and bribe a single man: if he give an alarm for assistance, the boat gets off, and the reward is lost. If he attempts to seize any one,

he is shot; he therefore prefers a small bribe, and secrecy: but twelve men would require a good deal to bribe them, or a strong resistance, when a little exertion of courage gains them 500 or 1000 dollars, and the forfeited property. This plan would be worth trying for a year or two; the effect would soon be seen, and nothing can be *worse* than the present state of things. It would not be difficult to organize a district police, which would greatly aid the exertions of the guards: the danger of plague, and the injury done to the revenue by smuggling, are worth considerable expence to prevent. I do not think guard boats worth their great cost; the wind which favours the smuggler often blows away the guard boat, and there are many other reasons which render boats ineffectual.

SECTION XIV.

Of Saving Banks.

The situation of a foreign government is very different from a national one. The national debt is the ruin of England, not because it is a debt, but because it is an overwhelming one; a man who ruins himself with debt, marks his weakness of character; but that is no reason why another, who has a good estate, may not borrow money for im-

proving that estate, with great safety and good sense.

The English will always have an adverse party in the Ionian islands. The dominion of strangers must create enemies; but by justice, improvements, and conciliation, the number of these enemies may be diminished. Good policy appeals to the sound sense of the people: self-interest will act strongly in favour of any government which seeks to engage it. Among other ways of securing the support of the many, is that of becoming their *debtor;* on this principle were the saving banks established in England. In Greece, such a system would add to the industry and the tranquillity of the islands. The money, so borrowed, would enable the Lord High Commissioner, at once, to execute works of the highest importance to the Ionian islands, while by the application of a certain portion of the annual revenue, the interest and principal would in *a given time* be paid off, and a clear gain remain to the public. The objects to be accomplished, the sums required, and the period in which the debt will be liquidated, are all known, and, if calculated with a just regard to the Ionian revenues, can do no mischief, while all the fundholders would be friendly to the government. In these islands, I am persuaded that great advantage would be derived from such a system, which would demand no additional tax, while considerable profit would accrue to the islands for ever, from the command of one

million of dollars. The money so raised would not be lost, as when spent in war; it would be expended among the labouring class, and handsome buildings of public utility would be received in exchange. In short, it would be a very profitable speculation on the part of government, and would, in a few years, increase its revenue, and enable it to diminish its taxes proportionably.

SECTION XV.

On the Prevention of Disease.

ALTHOUGH I did not presume to say any thing upon the subject of disease, beyond what it is right for every officer to study, that is to say, how to keep his men from sickness by attention to their habits and quarters; still I think it fair to publish the following letter from Dr. Cartan, a medical officer, whose skill is highly estimated in the Ionian islands: where local experience is added to professional talents, great weight is due to every information springing from such a source.

"Plymouth, November, 1824.

"DEAR COLONEL;

"I DO not know what your pamphlet is intended to embrace, but you are welcome to use the following observations in what manner you like. The strong winds prevailing in the valleys at particular

periods of the day; for example, in the valley of Argostoli, where after sun-down, and during the night, in summer, the exhalations of the day in part descend to the earth, probably while the heated upper stratum of earth continues for some time after sun-down to extricate others which cannot ascend. This is miasma in its most concentrated form, and will be pernicious, more or less, according to the surface, the season of the year, and the predisposition of bodies exposed to its influence; for the presence of a marsh is not necessary to the production of *remittent* fever, a disease more formidable than all others in the latter part of autumn, in the Ionian islands*. After sun-rise rarefaction commences, and continues to increase with the sun's force till twelve o'clock; during all this time, there is not a breath of air in the valley of Argostoli. About mid-day the rarefied air begins to ascend rapidly, and a cooler and denser air rushes in to supply its place, generally from the mountains of Acarnania and Epirus: thus a current is established which subsists till night, and is called by the inhabitants 'vento del golfo;' but the same thing would have happened, though in a lesser degree, did the gulph not subsist. This wind, highly salutary in itself, is dangerous when the body is overheated and sweaty. I wish to point your attention to it, as all

* This by no means implies that a marsh is not highly mischievous: it moreover strengthens what I assert, that soldiers ought not to sleep exposed to night air.

atmospheric vicissitudes should be guarded against in hot climates *, where they have a tendency to destroy the balance of the circulation, or, in other words, to injure the function of the skin, and with it the functions of the liver; and this again, in its turn, will have serious influence on all fevers. This chain of cause and effect is slowly established, yet it is not less formidable than those internal inflammations, which are the more immediate consequences of suppressed perspiration. The best method of avoiding these diseases is to keep the body always cool, by dressing lightly in summer, and eating and drinking sparingly at all times †.

"I must notice the Siroc, the dreadful Samiel of Egypt, cooled and modified by its passage over an extensive sheet of water, before its arrival at the islands, yet capable of producing the worst effects! A fatal epidemic prevailed among the men of the

* For this reason I am convinced of the advantage of wearing flannel next the skin. Quere, Is there any medical man who does not wear flannel next the skin himself? — I believe not.

† The dress I have ever found to be the best, is flannel waistcoat, cotton shirt, a pair of linen trowsers, and camlet jacket. No one who has worn a flannel waistcoat in a hot climate, for any time, will deny that it is far from being heating. The heat and weight of the soldiers' cloth coats is both unwholesome and irksome, to a degree almost past bearing. I cannot help thinking, that if they were clothed in red camlet, which is worn by officers, it would be very advantageous, and less expensive; in fact, all clothing, beyond a flannel waistcoat and cotton shirt, is, in the summer of a hot climate, a matter of decency only, and should be as light as is consistent with appearance.

8th regiment in Zante, in the autumn of 1821. At a particular period I had from thirty to forty men in the first stage of convalescence, all doing pretty well, and about twenty other bad cases; during the night the Sirocco commenced: next morning I could perceive little or no difference in the state of the sixty men in hospital. I lost six of them in the course of twenty-four hours; and am persuaded I should have lost the whole of them in three days had the Sirocco continued. I believe I once mentioned to you, that I conceived its malignant influence always diminished by lessening the force with which it impinges on the body; therefore we always had the doors and windows of the hospital shut, at the side on which it blew, and left the others open.

"Believe me to be,

"Dear Colonel, always yours,

"J. CARTAN,

"Surgeon 8th Regiment."

"Lieut. Col. Napier, &c."

APPENDIX:

CONTAINING

THE STATE OF THE THERMOMETER

AT

ARGOSTOLI,

FROM

APRIL 1822, TO MARCH 1824;

AND

STATISTICAL TABLES OF CEFALONIA.

AVERAGE STATE OF THE THERMOMETER AT ARGOSTOLI,

In the Island of Cefalonia, during the Quarter ending June 20, 1822.

Dates.	Thermometer. Max.	Med.	Min.	Wind.	Weather.
April 20.	69	64½	60	N.&N.W.	Clear weather till 24th March; 25th, cloudy and rainy, attended with thunder and lightning; clear till 17th April; 18th and 19th cloudy; 20th, cloudy and rainy, attended with a very high wind. A shock of an earthquake was felt the 29th March, Saturday, 3 o'clock P.M.
May 20.	75	69	63	N.W. & S.W.	Clear till 30th April; 1st, 2d, and 3d May, cloudy and rainy; clear till the 14th; the remainder of the month was cloudy and rainy. A severe storm occurred the 12th May.
June 20.	85½	76	67	N.W.	The 21st May, clear; 22d, cloudy and rainy, attended with thunder and lightning; clear till 27th; cloudy and rainy, 28th and 29th; clear till the 4th June; cloudy till the 11th, with rain on the 5th, 7th, and 8th; remainder of the month clear. A shock of an earthquake was felt on the 19th, at 10 o'clock P.M.

QUARTER ENDING 20th SEPTEMBER 1822.

Dates.	Thermometer. Max.	Med.	Min.	Wind.	Weather.
July 20.	88½	81¾	75	W.&N.W.	Clear and dry weather from 21st to 25th June; 26th, cloudy and rainy, attended with thunder and lightning; remainder of the month clear and dry. A slight shock of an earthquake was felt the 17th July, at 12 o'clock at night.
Aug. 20.	93	84½	76	W.&N.W.	Clear and dry weather the whole month; the 1st and 2d August excessive hot winds, the thermometer in the shade, and exposed to the hot wind, rose to 98. A shock of an earthquake was felt the 2d August, at half an hour after mid-day, immediately after which the hot winds ceased.
Sept. 20.	89½	79¾	70	W.&N.W.	Clear and dry weather from 21st August to 16th September; 17th, cloudy and rainy, attended with thunder and lightning; remainder of the month clear and dry. A slight shock of an earthquake was felt the 12th September, at half-past six o'clock P.M.; and another the 18th, at half-past nine o'clock A.M.

AVERAGE STATE OF THE THERMOMETER AT ARGOSTOLI,

In the Island of Cefalonia, during the Quarter ending Dec. 20, 1822.

Dates.	Thermometer. Max.	Med.	Min.	Wind.	Weather.
Oct. 20.	82	75	68	S. E. & N. W.	Clear weather from 21st October to 23d; cloudy and rainy from 24th to 29th, attended with thunder and lightning; clear from 30th October to 9th November; cloudy, attended with rain, from 10th to 15th; thunder and lightning the 10th, 11th, 12th, and 15th; clear weather to 20th.
Nov. 20.	71	65½	60	S. E. & N. W.	Clear weather from 21st to 25th November; cloudy from 25th November to 7th December, with rain the 26th, 28th, and 29th November; same the 3d, 4th, 5th, 6th, and 7th December, the two latter days attended with thunder and lightning; clear from 8th to 11th; cloudy and rainy to 20th.
Dec. 20.	65½	59¼	53	S. E. & N. E.	Clear weather from 21st September to 6th October; cloudy and rainy 7th, 8th, and 9th; the 7th thunder, and very much lightning; clear to the 14th; cloudy and rainy to the 20th. Two shocks of earthquakes were felt this quarter, the first the 21st September, at half-past 4 A. M., the other the 29th November, at half-past 7 o'clock P.M.

QUARTER ENDING 20th MARCH 1823.

Dates.	Thermometer. Max.	Med.	Min.	Wind.	Weather.
Jan. 20.	59	53	47	Easterly.	The greater part of the month cloudy and rainy. A shock of an earthquake was felt the 25th December, at 8 o'clock A.M.
Feb. 20.	64½	58½	53	S. E. & S. W.	Cloudy and rainy till 26th January; 27th, 28th, and 29th clear; cloudy and rainy till 4th February; clear till 15th; remainder of the month cloudy and rainy, with some showers of hail. A shock of an earthquake was felt the 29th January, at 2 o'clock P. M.
Mar. 20	65½	59½	54	Southerly	Clear and cloudy alternately, accompanied with rain; thunder and lightning during the month.

AVERAGE STATE OF THE THERMOMETER AT ARGOSTOLI,

In the Island of Cefalonia, during the Quarter ending 20th June 1823.

Dates.	Thermometer. Max.	Med.	Min.	Wind.	Weather.
April 20.	68	62	56	W. & N. W.	Cloudy and rainy from 21st to 24th March. Clear from 25th March to 10th April. Remainder of the month cloudy and rainy.
May 20.	78½	69	59½	W. & N. W.	Clear the whole month, except the 23d and 24th April, which were cloudy and rainy. Three shocks of earthquakes were felt during this month; the first the 2d of April at half-past ten o'clock, P. M.: the second, the 3d of May, at eight o'clock, A. M.; and the third, the 13th, at half-past six o'clock, P. M.
June 20.	80½	76	71½	S. & S. W. & N. & N. W.	Clear and cloudy alternately during the month, the days that were cloudy attended with rain. Three shocks of earthquakes felt this month, the first, the 2d of June at midnight; the second, the 12th at four o'clock, P. M.; and the third, the 19th, at half-past one o'clock, A. M.

QUARTER ENDING 20th SEPTEMBER, 1823.

Dates.	Thermometer. Max.	Med.	Min.	Wind.	Weather.
July 20.	87	82¾	77½	W. &. N. W.	Clear the whole month, except the 6th July, on which day a light shower of rain fell, and on the morning of the 17th, a heavy shower. A smart shock of an earthquake was felt the 10th July at mid-day.
Aug. 20.	90½	84½	78	W. & N. W.	Clear the whole of this month, except the 13th August, on which day two or three showers of rain fell. The 9th and 10th of August excessive hot winds blew from N. and N. E.
Sep. 20.	89	82½	76	W. & N. W.	Clear till the 8th September; 9th, 10th and 11th, cloudy and rainy. Two shocks of earthquakes were felt the 13th September. The 14th, 15th, 16th, 17th, and 18th, clear; on the latter day 13 or 14 motions of the earth were felt during the day and night: 19th and 20th, cloudy and rainy: several shocks were felt daily, during the 19th, 20th, and 21st September.

AVERAGE STATE OF THE THERMOMETER AT ARGOSTOLI,

In the Island of Cefalonia, during the Quarter ending 20th Dec. 1824.

Dates.	Thermometer. Max.	Med.	Min.	Wind.	Weather.
Oct. 20.	82	76¾	71½	S. & S. E.	Cloudy and rainy from 21st September to 27th. 29th and 30th clear: from 1st to 4th October sky dusky, with hot winds from S. E.: clear the remainder of the month, except the 6th, 7th, 11th, and 19th October, which were cloudy and rainy. Six shocks of earthquake were felt during this month.
Nov. 20.	77½	66½	55½	N. & S. E.	Clear weather from 21st October to 29th: cloudy and rainy from 30th to 4th November; remainder clear and cloudy, with rain alternately. Some snow fell during this month. Three shocks of earthquake were felt during this month.
Dec. 20.	66	60	54	Northerly	Clear weather from 21st November to 12th December, except the 3d, 4th, and 10th, which were cloudy and rainy: remainder clear. Two shocks of earthquake were felt this month. A quantity of snow fell this month.

QUARTER ENDING 20th MARCH, 1824.

Dates.	Thermometer. Max.	Med.	Min.	Wind.	Weather.
Jan. 20.	63	59½	36	N. & S. E.	Cloudy and rainy, with thunder and lightning, from 21st to 26th December: clear, 27th, 29th, and 30th. Cloudy and rainy, from 31st December to 7th January. Remainder of the month clear weather, except the 16th and 17th, which were cloudy, rainy with thunder and lightening. A slight shock of an earthquake the 1st January at two o'clock P. M.
Feb. 20.	60	56	52	N. & S. E.	Nearly the whole month cloudy and rainy, attended with thunder and lightning, and heavy showers of hail. A great quantity of snow fell this month, on the E. and S. E. mountain.
March 20.	65	62½	57½	S. E. & S. W.	Clear and cloudy alternately, with rain during the cloudy weather, till 5th March: clear till 10th, the remainder cloudy and rainy. A smart shock of an earthquake was felt the 21st February, at twenty minutes before eight o'clock, P. M., and two other slight ones the 27th and 28th. The former at three P. M. and the latter at five A. M.

STATISTICAL TABLES

OF THE

Island of Cefalonia;

COMPOSED BY THE MUNICIPAL OFFICERS,

IN THE YEAR 1823:

BY ORDER OF THE PRESIDENT,

LIEUTENANT-COLONEL C. J. NAPIER, C. B.

AND

DR. PANDASIN CARIDI,

Knight of the distinguished Order of St. Michael and St. George,

&c. &c. &c.

THE Author left Cefalonia before he had an opportunity of verifying the following Tables. He has not much confidence in their accuracy; but they are probably as correct as most tables of this nature are, and serve to give a general view of the productions of the Island, and the occupations of the people. The number of inhabitants he believes to be tolerably exact. The uva passa, or currants, are quite wrong, as the custom-house books proved; but this arises from the following circumstance:—the currants form the staple commodity of the island: a great increase of price having taken place, a report was spread that the government intended to lay an additional tax upon this article. The proprietors imagined, that the real object of the five magistrates, who were employed in forming the following tables, was to ascertain the quantity of uva passa, with a view to increased taxation, they therefore concealed just half the produce: but I leave the return as I received it, as it still shows the proportion of produce which each district bears to the others.

That such a report of increased taxation on uva passa should have arisen was natural enough; but that such a stupid measure could have been contemplated by the government I do not believe. The Ionian government know well, that the Morea is our rival in the currant trade, and that Sicily will shortly become so. The currants of Zante and Cefalonia will not bear half their present price when the Morea enjoys peace, and the Sicilians apply themselves to the cultivation of this fruit.

INHABITANTS.

	Males 16 and under.	Ditto 60 and under.	Males above 60.	Females 16 and under.	Ditto 50 and under.	Women above 50.	Jews.	Absentees.	Strangers.	Total.
Argostoli	771	1061	131	631	985	212	36	141	209	4174
Lixuri	1193	1453	188	974	1267	373	...	84	76	5608
Pertinz. Livato	2113	1698	388	1515	1916	814	...	1394	...	9838
— Icossimia	273	240	43	181	200	82	...	38	...	1057
— Leo.....	237	230	36	175	189	85	...	24	...	976
— Catoleo ...	176	154	17	108	112	44	...	7	...	618
— Scala	170	189	14	137	141	63	...	25	...	739
— Coronus ...	98	122	12	87	112	47	...	5	...	483
— Heraclea...	271	284	20	202	205	68	...	13	...	1063
— Pirgi	287	267	54	183	197	101	...	15	...	1104
— Omala.....	420	424	49	296	308	79	...	51	...	1627
— Talamies...	194	175	23	115	159	33	...	26	...	725
— Potamiana	786	847	120	640	629	192	...	33	...	3247
— Samos... ..	638	596	64	456	507	203	...	37	...	2501
— Tinea	605	694	75	404	532	136	...	28	...	2474
— Pilaro	884	787	83	699	792	252	...	214	...	3711
— Erisso.....	1341	1395	245	1171	1523	497	...	469	...	6641
— Missocoria	488	564	63	335	437	110	...	5	...	2002
— Catoi	415	541	73	319	375	125	...	42	...	1890
— Anoi	587	760	67	461	533	180	...	21	...	2609
	11947	12481	1765	9089	11119	3696	36	2672	285	53090

PROFESSIONS.

	Priests.	Deacons.	Clergymen or Clerks.	Monks.	Monks of Monasteries	Laymen.	Nuns.	Advoc. and Barrist.	Lawyers.	Physici. and Surge.	Bleeders or Cuppers.	Apothecaries.	Painters.	School Masters.
Argostoli	23	6	...	...	3	...	...	52	7	15	3	...	...	5
Lixuri	37	3	...	...	...	...	2	17	7	22	5	5	4	1
Pertinz. Livato	52	3	...	1	...	...	1	4	9	9	...	...	5	...
— *Icossimia*	...	...	...	...	...	...	...	2	2	...	...	...	...	...
— *Leo*	11	...	...	2	...	...	1	...	...	...	...	...	...	...
— *Catoleo*	3	..	...	...	...	...	...	...	1	...	...	...	...	...
— *Scala*	2	...	...	...	...	...	...	...	2	...	...	...	...	...
— *Coronus*	2	...	...	...	...	...	...	...	1	...	...	...	...	...
— *Heraclea*	10	...	...	5	...	...	...	...	1	...	...	...	...	...
— *Pirgi*	7	...	...	...	...	...	...	...	...	...	...	...	1	...
— *Omala*	5	1	...	4	...	...	...	...	2	...	...	...	...	...
— *Talamies*	6	...	...	2	...	...	...	...	2	...	...	...	1	...
— *Potamiana*	13	1	...	1	...	...	...	...	2	...	...	...	1	...
— *Samos*	12	...	...	2	...	...	...	...	4	...	...	...	...	...
— *Thea*	16	...	...	4	...	...	..	...	5	...	...	...	1	...
— *Pharo*	26	...	...	16	...	...	...	...	5	...	...	...	...	...
— *Kisso*	44	...	...	2	...	...	3	...	17	2	...	1	1	...
— *Mnocoria*	7	1	...	2	...	...	...	...	1	...	...	...	...	...
— *Cabi*	13	1	...	4	...	...	...	...	1	1	...	...	...	...
— *Anoi*	18	...	...	4	...	...	...	...	4	...	...	...	...	...
	310	16	...	49	3	...	7	75	73	49	8	6	14	6

ARTS AND TRADES.

	Agriculturists.	Masons.	Carpenters.	Smiths.	Sailors.	Ship-builders.	Coopers.	Tanners.	Shoemakers.	Taylors.	Goldsmiths.
Argostoli	24	12	23	24	70	4	10	12	31	43	15
Lixuri	325	50	31	7	367	6	25	.....	43	39	8
Pertinz. Livato	113	86	27	3	1573	25	3	.....	.....	25	3
— Icossimia	196	1	3	.....	43	.....	.....	.....	.....	.....	.....
— Leo	178	4	.....	.....	36	.....	.....	.....	2	2	.....
— Catoleo ...	140	.....	.....	.....	3	.....	1	.....	.....	1	.....
— Scala	185	2	3	.....	16	.....	1	.....	2	.....	.....
— Coronus ...	109	.....	.....	3	4	.....	1	.....	.....	.....	.....
— Heraclea...	270	.....	.....	1	6	.....	2	.....	.....	1	.....
— Pirgi	271	.....	3	.....	7	.....	.....	.....	.....	1	.....
— Omala.....	377	2	32	4	47	.....	.....	.....	1	.....	.....
— Talamies ...	175	2	1	.....	23	.....	.....	.....	.....	.....	.....
— Potamiana	811	13	2	1	31	.....	.....	.....	.....	.....	.....
— Samos	537	.....	4	4	32	1	.....	.....	2	1	.....
— Tinea	1039	.....	.....	1	52	.....	.....	.....	2	1	.....
— Pilaro	963	43	5	61	3	.....	1	1	2	.....	.....
— Erisso	1649	9	9	3	105	3	1	9	21	14	.....
— Missocoria	517	1	.....	.....	1	.....	.....	.....	.....	1	.....
— Catoi	493	.....	.....	1	44	.....	.....	.....	1	.....	.....
— Anoi	191	3	.....	.....	.....	.....	.....	.....	1	3	.....
	8563	228	137	113	2463	39	45	22	108	132	26

ARTS AND TRADES.

	Watchmakers.	Tinmen.	Butchers.	Fishermen.	Bakers.	Mercers.	Hucksters.	Coffeehouse-keepers.	Wax-chandlers.	Weavers.	Makers of Mills.
Argostoli	5	3	3	66	15	.....	38	13	4	24	2
Lixuri	2	.....	14	74	14	.....	84	3	2	122	2
Pertinz. Livato	.....	.....	4	.....	3	39	8	.....	.....	10	.....
— Icossimia	.....	.....	.....	.....	.....	3	.....	.....	.....	2	.....
— Leo	.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....
— Catoleo	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
— Scala	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
— Coronus	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
— Heraclea	.....	.....	.....	.....	.....	5	.....	.....	.....	.....	.....
— Pirgi	.....	.....	.....	.....	.....	17	.....	.....	.....	.....	.....
— Omala	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	.....
— Talamies	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....
— Potamiana	.....	.....	14	.....	1	5	.....	.....	.....	.....	.....
— Samos	.....	.....	.....	.....	.....	29	.....	.....	.....	2	.....
— Tinea	.....	.....	17	1	.....	3	11	.....	.....	31	.....
— Pilaro	.....	.....	3	.....	.....	.....	6	.....	.....	128	5
— Erisso	.....	.....	20	2	6	3	17	.....	.....	180	2
— Missocoria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
— Catoi	.....	.....	.....	.....	.....	1	3	.....	.....	2	.....
— Anoi	.....	.....	.....	.....	.....	.....	1	.....	.....	25	.....
	7	3	75	143	39	115	170	16	6	526	11

ARTS AND TRADES.

	Millers.	Cordwainers.	Hatters.	Hat-box-makers.	Manufacturers of Cotton and Linen.	Tinkers.	Barbers.	Porters.
Argostoli	3	1	7	2	.....	5	4	13
Lixuri	.....	.....	.....	.....	501	.....	12	17
Pertinz. Livato	.....	.....	.....	.....	.....	.....	.....	.....
— Icossimia	.....	.....	.....	.....	.....	.....	.....	.....
— Leo	.....	.....	.....	.....	.....	.....	.....	.....
— Catoleo	.....	.....	.....	.....	.....	.....	.....	.....
— Scala	.....	.....	.....	.....	.....	.....	.....	.....
— Coronus	.....	.....	.....	.....	.....	.....	.....	.....
— Heraclea	.....	.....	.....	.....	.....	.....	.....	.....
— Pirgi	.....	.....	.....	.....	.....	.....	.....	.....
— Omala	.....	.....	.....	.....	.....	.....	.....	.....
— Talamies	.....	.....	.....	.....	.....	.....	.....	.....
— Potamiana	.....	.....	.....	.....	.....	.....	.....	.....
— Samos	.....	.....	.....	.....	.....	.....	.....	.....
— Tinea	.....	.....	.....	.....	.....	.....	.....	.....
— Pilaro	.....	.....	.....	.....	.....	.....	.....	.....
— Erisso	.....	.....	.....	.....	.....	.....	.....	.....
— Missocoria	.....	.....	.....	.....	.....	.....	.....	.....
— Catoi	.....	.....	.....	.....	.....	.....	.....	.....
— Anoi	.....	.....	.....	.....	.....	.....	.....	.....
	3	1	7	2	501	5	16	30

ARTS AND TRADES.

	Splitters of Wood.	Armourers.	Gilders & Varnishers	Bakers of Paste.	Distillers.	Soap-makers.	Washer-women.	Cutters of Cotton.	Silk Merchants.	Stocking Weavers.	Muleteers.	Haberdashers.
Argostoli	3	3	2	1	6	1	15	4	3	27	8	18
Lixuri	.....	.....	.....	.....	12	.....	.....	.....	.....	.....	...	12
Pertinz. Livato	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Icossimia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Leo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Catoleo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Scala	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Coronus	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Heraclea	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Pirgi	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Omala	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Talamies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Potamiana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Samos	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Tinea	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Pilaro	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Erisso	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Missocoria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Catoi	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
— Anoi	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
	3	3	2	1	18	1	15	4	3	27	8	30

EDIFICES AND MACHINES.

	Parish Churches.	Private Chapels.	Convents of Monks.	Convents of Nuns.	Public Buildings.	Private Houses.	Dispersed Houses.	Oil-mills, or presses.	Windmills.	Watermills.	Horsemills.	Handmills.	Manufacture of Earthenware.	Manufacture of Liquorice.
Argostoli ...	8	11	1	...	7	719	26	8	2	...	2	43	.....	.....
Lixuri.....	14	18	...	...	1	1176	96	1	8	...	...	.....	1	1
Pertz. Livato.	49	72	4	...	...	2040	141	55	26	...	...	23	.....	.....
— Icossimia	5	.....	1	...	...	226	12	15	...	2	...	2	.....	.....
— Leo	6	4	1	...	1	210	11	7	...	3	...	.....	.....	.....
— Catoleo ...	4	3	...	...	...	144	.....	9	...	1	...	.....	.....	.....
— Scala	5	2	...	...	...	133	6	9	...	1	...	.....	.....	.....
— Coronus	3	1	...	...	...	124	7	4	...	1	...	.....	.....	.....
— Heraclea	9	5	1	...	...	263	20	12	...	4	1	.....	.....	.....
— Pirgi	8	1	..	...	...	240	19	3	...	1	...	.....	.....	.....
— Omala	8	3	1	..	..	359	6	6	2	...	1	39	.....	.....
— Talamies	5	3	1	...	...	171	29	9	2	...	...	3	.....	.....
— Potamiana	8	15	1	...	...	762	25	35	6	...	...	73	.....	.....
— Samos	10	5	2	...	...	535	9	13	...	3	...	.....	.....	.....
— Tinea.....	10	9	1	...	...	518	7	28	4	...	...	68	.....	.....
— Pilaro	30	16	1	...	...	787	2	27	7	3	...	155	.....	.....
— Erisso ...	33	35	3	...	3	1437	13	84	10	...	...	350	.....	.....
— Missocoria	10	4	2	...	...	408	103	3	1	...	...	115	.....	.....
— Catoi.....	13	9	1	...	...	416	31	.....	1	..	...	79	.....	.....
— Anoi	14	8	...	...	...	520	5	11	5	...	...	141	.....	.....
	257	228	21	...	12	11118	568	339	74	19	4	1091	1	1

	WATERS.				MARINE.				
	Running Springs and Fountains.	Torrents.	Wells, public and private.	Cisterns.	Ships.	Sailing Vessels or Boats.	Coasting Vessels or Boats.	Vessels for Passage, or small boats.	Fishing boats.
Argostoli	.....	.....	191	4	1	29	4	15	31
Lixuri	7	1	319	.....	10	37	13	18	23
Pertinz. Livato	3	1	871	394	86	7	3	.....	6
— Icossimia	5	.....	10	76	1	.....	.....	.....	.....
— Leo	13	1	16	12	.....	1	5	.....	.....
— Catoleo	3	.....	2	.....	.....	.....	.....	.....	.....
— Scala	3	1	5	1	.....	.....	.....	.....	.....
— Coronus	3	.....	2	.....	.....	.....	.....	.....	.....
— Heraclea	7	1	2	8	.....	.....	.....	.....	.....
— Pirgi	4	1	1	16	.....	.....	.....	.....	.....
— Omala	.....	.....	41	152	.....	.....	.....	.....	.....
— Talamies	.....	.....	42	43	.....	.....	.....	.....	.....
— Potamiana	.....	.....	.....	447	.....	15	5	.....	.....
— Samos	12	.....	2	95	.....	2	4	2	.....
— Tinea	25	2	4	43	.....	.....	6	7	1
— Pilaro	13	.....	7	202	9	16	1	1	.....
— Erisso	.....	.....	15	492	12	15	18	1	6
— Missocoria	3	.....	30	5	.....	.....	.....	.....	.....
— Catoi	1	.....	192	.....	.....	.....	.....	.....	.....
— Anoi	7	.....	19	34	.....	.....	.....	.....	.....
	99	8	1770	2044	119	107	68	49	67

ANIMALS.

	Ploughing Oxen.	Horses.	Mules.	Asses.	Sheep.	Goats.	Hogs.
Argostoli	36	35	29	25	3580	1796	5
Lixuri	18	8	167	47	1620	129	.....
Pertinz. Livato	75	51	374	397	978	307	179
— Icossimia	67	20	56	103	458	577	77
— Leo.....	86	17	16	52	464	357	133
— Catoleo	79	12	3	8	266	228	108
— Scala	96	13	12	83	481	475	122
— Coronus	75	20	7	45	315	224	79
— Heraclea	181	45	6	88	1006	597	216
— Pirgi	102	23	8	86	507	674	90
— Omala.....	81	54	76	99	1313	1433	60
— Talamics.....	26	13	29	60	202	184	62
— Potamiana	178	70	175	121	1091	5306	361
— Samos.....	207	41	42	127	930	1122	206
— Tinea	128	52	93	147	1503	2125	174
— Pilaro	320	90	54	144	2494	2679	434
— Erisso.....	377	69	27	321	2637	957	988
— Missocoria.....	157	38	43	149	189	8	59
— Catoi	73	5	42	187	165	49	15
— Anoi	209	49	153	165	1636	583	174
	2574	725	1412	2454	21835	19810	3542

PRODUCTIONS.

	Wheat.	Barley.	Oats.	Pulse, pease, beans, &c.	Straw & Hay.	Almonds and Walnuts.	Unripe Fruits.	Cotton.
	Barr.	Barr.	Barr.	Barr.	Mule lds	Barr.	Lbs.	Lbs.
Argostoli	704	2486	.....	.....	3000	26	9610	1745
Lixuri	1211	2354	.....	.....	2000	18	87300	6658
Pertinz. Livato	397	1912	14	76	1041	54	28220	491
— Icossimia	320	955	2	13	454	31	67800	15
— Leo.....	294	1054	16	43½	532	48	72000	171
— Catoleo ...	868	52	93	506	70	.....	.....	406
— Scala	12	1285	27	42	560	14	2000	24
— Coronus ...	36	1257	17	60	508	12	.....	.....
— Heraclea...	926	2719	235	157	1615	74	.....	70
— Pirgi	1	1737	.....	20½	838	5½	.....	.....
— Omala ...	1020	878	27	74	1065	6¾	.....	.....
— Talamies...	2	681	20½	8½	286½	6¾	.....	105
— Potamiana	1	4139	424	144	2067	10	.....	5
— Samos.....	334	2545	156	207	1546	49	100	49
— Tinea	560	3030	1075	290	2475	32	50000	900
— Pilaro	385	3315	194	392	816	34½	6020	75
— Erisso.....	362	4198	65	798	1580	39	.....	81
— Missocoria	548	2991	56	33	1898	5	.....	2529
— Catoi	195	2341	5	.....	1226	.....	.....	9242
— Anoi	1135	4650	1075	205	2180	.....	.....	790
	7581	44579	3501½	3069½	25757½	465½	323050	23426

STATISTICAL TABLES.

PRODUCTIONS.

	Flax.	Linseed.	Wool.	Cheese.	Honey.	Wax.	Moscate.	Wine.
	Lbs.	Barr.	Lbs.	Lbs.	Lbs.	Lbs.	Barr.	Barr.
Argostoli	490	49	3593	6350	180	29	30	2450
Lixuri	.....	.....	2340	2869	260	39	3202	11787
Pertinz. Livato	1829	71	19050	5291	572	72	.....	13870
— Icossimia ...	92	3	9508	8195	918	93	.....	1425
— Leo	567	19⅞	866	9523	385	37	.....	1034
— Catoleo	833	24½	551	2465	235	23½	.....	696
— Scala	2132	114	1019	3350	85	8½	.....	1002
— Coronus	1744	46	6069	2841	70	7	.....	383
— Heraclea.....	240	72	1889	11236	626	79	.....	1452
— Pirgi	.....	.....	961	4992	12	1	.....	745
— Omala.....	60	2½	1391	13312	517	82½	.....	1100
— Talamies.....	438	8⅚	431	863	532	65	.....	1526
— Potamiana ...	208	4¾	2419	6836	1385	147½	.....	4922
— Samos.....	940	335	172½	3585	1451	131¾	.....	2060
— Tinea	1745	61	7680	21866	700	197	.....	4250
— Pilaro	2390	57¾	9410	47110	649	61	.....	6660
— Erisso.....	5960	141	7044	31750	10	1	.....	5168
— Missocoria ...	110	2⅓	205	1665	40	4	78	2533
— Catoi	30	¼	470	935	100	10	660	2506
— Anoi	1590	61	2498	12490	.....	.....	.....	4050
	21298	1074	67560½	197534	8727	1088½	3970	69619

PRODUCTIONS.

	Currants.	Brandy.	Noyeau.	Oil of Olives.	Charcoal.	Lime.	Tiles.	Extract of Liquorice.
	Lbs.	Barr.	Bott.	Flasks.	Lbs.	Barr.	No.	Lbs.
Argostoli	499000	80	120	4587	.....	1103	.....	.....
Lixuri	873534	741	.....	2243	.....	.....	.....	.....
Pertinz. Livato...	537150	14	.....	16876	.....	10196	.....	.....
— Icossimia ...	3480	.....	.....	2614	.....	800	.....	.....
— Leo	22255	.....	.....	2129	.....	1700	25000	.....
— Catoleo	9774	.....	.....	1482	.....	.....	.....	.....
— Scala	2370	.....	.....	1354	.....	450	202500	.....
— Coronus	6820	.....	.....	1466	.....	300	.....	.....
— Heraclea.....	4316	.....	.....	2648	.....	.....	.....	.....
— Pirgi	2745	17½	.....	534	.....	.....	.....	.....
— Omala	25203	36¼	.....	1563	39800	2280	.....	.....
— Talamies.....	14250	1	.....	946	.....	2150	.....	.....
— Potamiana ...	11972	12¾	.....	4938	10300	1860	.....	.....
— Samos...	15220	9	.....	4078	800	.....	.....	.....
— Tinea	500000	104	.....	3060	.....	12000	.....	.....
— Pilaro	13190	36	.....	5918	.....	11000	.....	.....
— Erisso	263000	48	.....	11914	.....	9000	.....	.....
— Missocoria ...	94643	.....	.....	935	.....	640	.....	.....
— Catoi	82340	37	.....	36	.....	.....	.....	.....
— Anoi	278000	.....	.....	2850	.....	1000	.....	.....
	3359262	1140½	120	72167	50900	54479	227500	.....

PRODUCTIONS.

	Squills.	Fruit of the Cocoa Tree.	Raisins.	Melons.	Indian Corn.	
	No.	Lbs.		No.	Bush.	Bu.
Argostoli	.....	.....	1870	.....	30	64
Lixuri	.....	.....	4560	.....	157	60
Pertinz. Livato	1000	60	479	.....	10	14
— Icossimia	.....	50765	.....	.....	.....	.....
— Leo	.....	591	.....	.....	4	.....
— Catoleo	.....	.....	.....	.....	38	.....
— Scala	2000	60	2	.....	7	1
— Coronus	.....	.....	.....	.....	.....	.....
— Heraclea	.....	.....	.....	.....	293	7
— Pirgi	1600	.....	112	.....	.....	2
— Omala	2000	.....	.....	.....	.....	4½
— Talamies	23600	35	738	.....	.....	11
— Potamiana	1470	50	.....	.....	.....	1
— Samos	.....	875	.....	.....	.....	1
— Tinea	.....	50	200	50	.....	.....
— Pilaro	.....	870	.....	.....	.....	.....
— Erisso	.....	3250	.....	.....	.....	.....
— Missocoria	.....	.....	.....	8060	14	.....
— Catoi	.....	.....	3486	53852	.....	.....
— Anoi	.....	.....	.....	7900	.....	.....
	49670	64436	10947	69862	553	165½

PRODUCTIONS.

	Beans.	Lentils.	Brush Wood.	Faggots of Wood.	Wood.
	Bush.	Bush.	Bundles.	No.	Loads.
Argostoli	58	7	580	3820	12
Lixuri	.....	.....	.....	29878	275
Pertinz. Livato	2	.....	.....	.....	56973
— Icossimia	.....	.....	.....	.....	7300
— Leo	.....	.....	.....	.....	4364
— Catoleo	.....	.....	.....	.....	4075
— Scala	25½	.....	.....	.....	5490
— Coronus	.....	.....	.....	.....	3839
— Heraclea	8	.....	.....	.....	8365
— Pirgi	.....	5½	.....	.....	8316
— Omala	.....	3	.....	.....	8978
— T[illegible]nies	.....	.....	.....	.....	3906
— Potamiana	.....	.....	.....	.....	18811
— Samos	30	.....	.....	.....	18080
— Tinea	.....	.....	.....	.....	20000
— Pilaro	.....	.....	.....	.....	18000
— Erisso	.....	.....	.....	.....	15000
— Missocoria	.....	90	.....	.....	8817
— Catoi	.....	.....	.....	.....	4227
— Anoi	.....	.....	.....	.....	30000
	123¼	105½	580	33698	244828

THE END.

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